

RAWALPINDI MEDICAL UNIVERSITY



Integrated Modular Curriculum First Year MBBS 2023

Dated: 16-10-2023

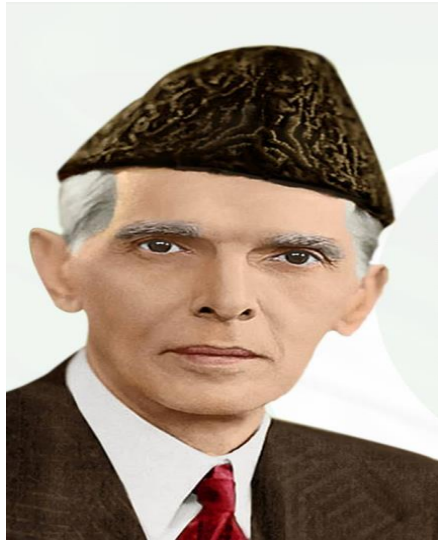
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Dedicated to Hazrat Muhammad (S.A.W)



Universities are Deemed for Creation and Dissemination of Knowledge. RMU has started this service for medical Academia

SECTION-I



Quaid-e-Azam

Muhammad Ali Jinnah

25th December 1876

“Without education it is complete darkness and with education it is light. Education is a matter of life,”

FOREWORD

Rawalpindi Medical University seeks excellence in providing qualitative programs through modern tools in Medical Education, Scientific Research and Health Professional Services to achieve excellence in health care delivery. The Integrated Curriculum is becoming an increasingly popular concept internationally. The goal of integration is to break down barriers between the Basic and Clinical Sciences currently in place as a result of traditional curricular structure. Integration promotes retention of knowledge and acquisition of skills through repetitive and progressive development of concepts and their applications. In addition to these curricular reforms the important aspect is successfully running the implementation of the new curriculum & monitoring its each aspect without affecting the quality of Medical Education being delivered to the students. Quality Assurance is important to evaluate whether the goals have been met or not to ensure sustained success and growth of Integrated Modular System



Prof. Muhammad Umar
(Sitara-e-Imtiaz)
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Vice Chancellor
Rawalpindi Medical University
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PREFACE

This is a great prospect for RMU and curriculum committee to formulate the modular curriculum of basic medical sciences. It is a task, well meant for its contribution in medical education. Hopefully it will go a long way in training the medical graduates, as per required national and international standards of medical education. The Modular teaching is likely to give a fresh and varied approach to learning process and at the end optimizing maximum learning outcomes. This entails coordination, patience, commitment and diligence from all those who are on board, either the faculty or the students. All this seems to be encouraging, yet limited resources, inadequate man power, and difficulty in breaking traditional shackles are tangible obstacles.

The preparation and implementation of modular curriculum provides the faculty an opportunity to design and reorientate and reconceptualize health –illness process. Transforming academic stakeholders’ learning perspectives and then to translate it in students’ development as an effective force of society, well versed with modern day problems, is an uphill task. This is a humble effort in this regard. Still there is lot to distill, crystallize and narrate. Hopefully from this marathon, the curiosity will emerge like a fresh breeze, from here the character will arise in the horizon, as all this at the end is meant to serve the ailing humanity and to accomplish the dream of a healthy society.

At the end, it will be great injustice not to acknowledge the unwavering and untiring support of Prof Dr Muhammad Umar, Vice Chancellor RMU, who is an ardent supporter and promoter of anything which gives a fresh impetus to medical education and practice. It’s all because of his continuous input and persuasion, that the modular curriculum achieved fruition.

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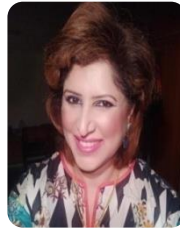
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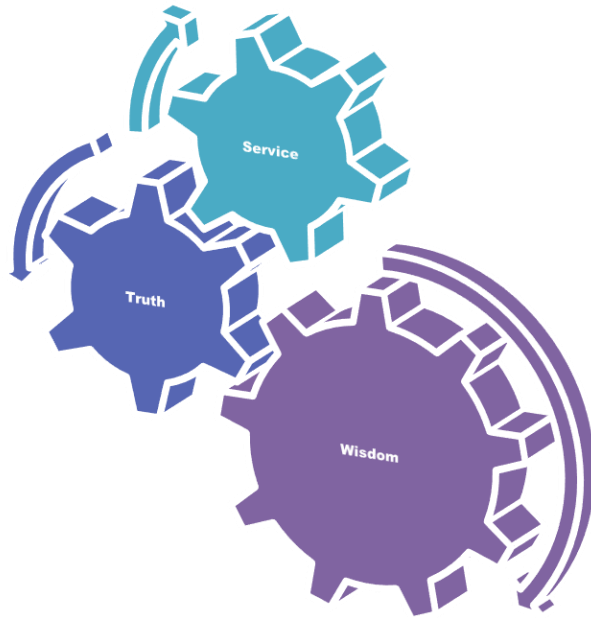


Muhammad Arslan Aslam
Computer Operator



University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

Introduction to Rawalpindi Medical University

History

Rawalpindi Medical College was established in Faisalabad on 18th March 1974 and later shifted to Rawalpindi on 5th November 1974 in an incomplete building at Tipu Road. The founder principal of RMC, Prof. Abdul Latif, worked hard to establish the institution. The student hostels, staff colony and auditorium were built. Apart from his own specialty of anatomy he completed the entire faculty. He also managed to acquire the Holy family hospital from missionary church and central Government Hospital from central Government that later became Rawalpindi General Hospital and now Benazir Bhutto Hospital. The District headquarter Hospital was also affiliated to the college as 1st teaching hospital. Prof. Mohammad Nawaz the 2nd Principal and Prof.

Mohammad Iqbal as Professor of surgery and later on Principal played pivotal as pioneer team to establish all components of RMC. Prof. Iqbal, Prof. Saad Rana worked hard to establish New Teaching Block in Holy Family Hospital with help of Islamic Development Bank.

The Legacy was taken forward by respective forthcoming Principals, worth mentioning is Prof. Mubashir Hussain Malik who established department of Psychiatry and worked hard to develop its international collaborations. The Department of Medical Education and the institute of Allied health sciences established in 2007 was the vision of Prof. Muhammad Musadiq Khan, he also started the new teaching block holy family hospital Rawalpindi as well as ICU and CCU.

First Rawalian Principal, Prof. Mohammad Umar after taking over the office in 2013, started working on multi- dimensional approach to further develop the institution. He restructured the undergraduate training program by establishing purpose built Department of Medical Education (DME), upgraded student libraries, Cafeteria, student section and hostels. Arranging historical meeting to develop consensus on national guidelines for the undergraduate training headed by chairman HEC, President PMDC, Vice chancellor UHS and all the principals of medical colleges is another credit to RMC in his tenure.

Regarding patient care projects ,worth mentioning are ,State of the art centre for Liver and Digestive diseases(CLD),Multi Organ Failure Centre(MOF), Medical ICU, Department of Infectious diseases (DID),Department of Emergency and Critical care(DEC) and up gradation of the affiliated hospitals.

To establish recognized postgraduate training in super specialties international conferences, Mentorship program are other important achievements.

Since 1947 more than 7900 students have graduated and are serving nationally and internationally.RMC is privileged to claim top positions in university examination several times. Best of the best graduate in UHS is also a Rawalian.

Academic programs of the college are accredited by UHS, CPSP and PMDC. The College got full recognition by General Medical Council UK, American specialty boards and internship programs with different universities abroad and WHO.

Rawalpindi Medical College has always occupied a unique position in the public sector, being one of the leading medical colleges in South Asia. It serves as an extraordinary interface between health care provision and medical education; with the three allied hospitals bearing the brunt of the city's health care needs, medical and paramedical undergraduate courses that train the sharpest minds of the country, and diverse post-graduate training programs.

Now Old Campus mainly serves administrative purposes and the first two i.e. non-clinical years of the students of MBBS degree are taught there and next three in New Teaching Block Holy Family hospital.

The institute has strived to be upgraded to the level of an independent University after which the annual system of MBBS degree has been changed to the internationally preferred modular system. Now after the successful launching of MD/MS program by VC RMU we are struggling hard to get the M.Phil and PhD program approve.

History of Integrated Modular Curriculum

Abraham Flexner, while evaluating medical schools in the United States and Canada, found three different ways in which a student could receive training to become a physician:

- 1) Apprenticeship with a practicing physician,
- 2) Through a proprietary medical school, or 3) by a university-based medical school and associated hospital.¹

The publication of Medical Education in the United States and Canada , referred to as the Flexner Report in 1910 criticized the lack of science content and application of the scientific method in teaching diagnosis and treatment.² This resulted in the reform of medical education in the United States through the adoption by the Council on Medical Education in 1905 of the standard adopted that medical students would have two years of education in the sciences of human anatomy and physiology and two years of clinical training in a teaching hospital.³ The implementation of this reform was completed in the 1930's.

Principles of developing Integrated Modular Curriculum

Since the time that scientifically-based medical education became the standard for training physicians, there has been an exponential increase in the scientific knowledge that a physician must understand and apply to diagnose and treat patients competently. In addition to training in human anatomy and physiology during the first two years in medical school, a present-day medical student also receives instruction in biochemistry, cell biology, embryology, epidemiology, genetics, histology, immunology, microbiology, molecular biology, neurobiology, nutrition, pathology, pharmacology and virology. These foundational or basic sciences enable the future physician to understand what constitutes the homeostasis of the healthy individual, the mechanisms by which that homeostasis is disrupted by disease, and how particular disease states may best be treated. A competent physician will be able to apply concepts from these foundational sciences and integrate new scientific knowledge and technology to rationally solve clinical problems presented by patients.

With new discoveries and advances in the foundational sciences increasing every year, the challenge for medical educators is to discern which of these advances together with current knowledge will help the medical student relate the foundational sciences to medicine and clinical practice. A recent study by the Association of American Medical Colleges and the Howard Hughes Medical Institute described the competencies in the foundational sciences that a physician entering residency should possess in order to be able to practice medicine grounded in scientific principles.⁴ The report emphasized the importance of the natural sciences in medical education but also stressed that they should be presented in a way that students recognize their relevance to medical practice. These competencies, along with the accompanying learning objectives in the report, will serve as an excellent guide in helping medical educators present the scientific concepts that will prepare the medical student to practice science-based medicine.

The ultimate goal of all of the foundational sciences is to prepare the student to take the greatest advantage of clinical experience available in their medical training. Regardless of their separate venues, foundational science education and clinical training are characterized by an extensive interdependency. The foundational sciences provide a high quality learning experience when they are correlated with clinical problem solving challenges.

Likewise, clinical training becomes a high quality learning experience when it is fully supported by the foundational sciences.

Scientific reasoning serves as the basis for clinical problem solving. It requires a fund of knowledge upon which to base hypothetical possibilities that can be tested. Thus, in its most general aspect, the process of clinical diagnosis is a guess based on the facts available. More precisely, it is a guess that is made more reliable when based on information provided by the foundational sciences

In general the foundational sciences should be integrated, both horizontally and vertically, in the medical curriculum and should be taught in a clinical context whenever possible. The vocabulary and core concepts that underpin all of the other courses should be introduced in year 1 and reinforced in year 2. These core concepts should be introduced in a clinical context with problem solving exercises so that the students gain experience applying those concepts to clinical decision making. The clinical years are the most appropriate place for the mastery of the detailed basic science concepts required for a full understanding of the clinical condition and treatment options for the patients with whom the students are working. This education strategy allows the students to appreciate fully the importance of mastering those detailed basic science concepts that most closely relate to patient care. Also, because students are learning these concepts in the clinical framework of a real patient experience they are more likely to retain and be able to apply these concepts in the future.

There are almost as many strategies for achieving horizontal and vertical integration as there are medical schools, but there are some fundamental principles for successful integration that apply to most of the integration models that exist. While there are many ways in which integration of the foundational sciences can be organized, successful integration always requires that faculty work with each other in the planning and implementation of integration so that key concepts flow from one lecture to another. Since it is seldom possible for all related lectures to be organized sequentially, it is important that faculty make it clear to the students how the concepts that they cover are linked to others in the curriculum.

Foundational sciences are best integrated in a clinical context that requires clinical application of the core foundational science concepts. For the didactic portion of the curriculum, this can be achieved by organizing lectures around clinical cases. However, it is also important to involve the students in decision-making processes that utilize core foundational science concepts to solve clinical problems and to do this in an integrated manner to the extent possible. For example, clinical case exercises related to lysosomal storage diseases, glycogen storage diseases, cardiovascular disease and diabetes can be designed to involve core concepts that are associated with biochemistry, cell biology, molecular biology, genetics and nutrition.

The second year curriculum varies widely among medical schools, but it is important that the first-year and second-year faculty work together so that the core concepts from the foundational science curriculum in year 1 are integrated with the second-year curriculum. The first step in this process is an identification of the key concepts from the first-year curriculum that underpin the second-year curriculum. This helps to define those concepts that should be part of the first-year curriculum. It also allows a coordination of the first-and second- year curriculum so that there is appropriate review and expansion of important foundational science concepts in the second year curriculum. It can also be valuable to introduce clinical cases in the first year and revisit them in a more detailed manner in the second year.

Integration of the foundational and clinical sciences is the most challenging in the clinical years because much of the content is taught at the bedside and often at various locations. However, many clinical courses are now standardizing the clinical experience by defining lists of patients that every student must see and procedures that every student must master. In much the same manner foundational science and clinical faculty can work together to identify the key foundational science concepts which are important for student understanding of the clinical learning issues and should require mastery of those foundational science concepts. Typically, this would draw on the foundational science concepts learned in years 1 and 2 that are ideally suited for understanding the disease process being studied, but would go into a level of detail that would be inappropriate for a first or second year course.

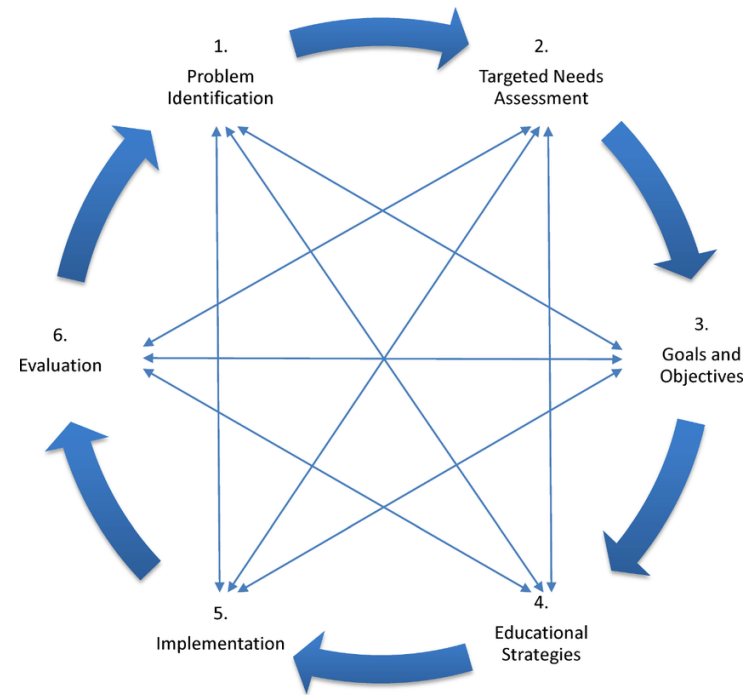
Diversity is strength in the gene pool and it is strength in the curriculum. In order to play a proper role in the curriculum, it needs to be taught through a diversity of modalities that allow its fundamentals to be applied, either in learning more complex concepts or in application to clinical problems. While the traditional lecture has a strength in organizing and communicating facts and concepts, the absence of using that information to make a decision and act on it, e.g. dialog, drawings, reports, prevents the students from using an optimal whole-brain approach.⁵ The temporal lobes that process the information in our long term memory are not designed to postulate possibilities and also make a logical choice among them. A whole-brain approach engages the prefrontal area to perform the latter task and draws on known information thus producing a highly effective use of the whole brain in learning. The modalities of Team-Based Learning and Problem Based Learning are two examples of teaching strategies that employ group problem solving to engage the whole brain including the limbic emotions that result when people work together.^{6,7} This metacognitive approach has been recognized in a report by Bransford, Brown and Cocking as one of the three key essential elements for effective education that were identified by the National Research Council.⁸

Many teachers are now also employing active strategies during lecture to better engage the student. The use of hand-held audience response transmitters, —clickers, permit the instructor to make a formative assessment of the understanding of a concept as it is being taught and a —think-pair-share method that has students talk briefly with a neighbor in response to a question about the topic being taught are two examples.

Physician competency in the foundational sciences is best achieved when they are integrated with each other throughout the medical curriculum and effectively applied to solve clinical problems. An in depth mastery of the foundational sciences is becoming increasingly important to prepare future physicians for the scientific advances that are rapidly changing the practice of medicine. At the same time there are pressures to shrink the curriculum time devoted to the foundational sciences. Thus, it is absolutely imperative that students enter medical school with a prior exposure to some combination of biochemistry, cell biology, molecular biology and genetics. This prerequisite will introduce undergraduate students to the vocabulary and basic concepts that they will be learning and applying in a more clinical context in medical school. Ideally, this undergraduate

prerequisite will also teach students the basics of scientific reasoning. It should be recognized that the coverage of these topics is very uneven at the undergraduate level, so this prerequisite should not be considered as a replacement for these content areas in medical school, but rather a means to make learning in the medical curriculum more effective. Finally, as described in the 2009 AAMC-HHMI report, these topics would be best taught in an integrated manner at the undergraduate level so that students are exposed to the vocabulary and basic concepts of all four content areas equally, and so that the students learn how those content areas are interrelated.

Our concept and process of curriculum development is grounded in the Kern's model for medical curriculum development.



Types of Integration

- Integrated teaching was first introduced at the Case Western Reserve University Medical School, Cleveland, Ohio in 1952 in one course.⁴ The integrated curriculum combines independent disciplines in an integrated approach, usually organized around an organ/system of the body. The pioneer in the UK was the University of Newcastle upon Tyne in 1962⁵. By 1974 it had been introduced in many medical schools in USA and Canada.⁶ Integrated strategies have the advantage of motivating students. It develops a holistic approach to clinical problems, better recall, early clinical training, and development of self-learning skills which are essential in preparing students for continued education beyond the university.
- There are many versions of integration and any one of a number of combinations between the basic sciences and the clinical disciplines may be adopted. The integration can be horizontal; between the basic sciences or between the clinical disciplines, or vertical between the basic sciences and the clinical subjects, or both.⁷
- Vertical integration between basic sciences and clinical medicine according to the organ-system model has been used by different Medical Schools.^{8–9} However, vertical integration throughout the entire curriculum require a lot of time and work in planning, organization and execution. The teachers have to be deeply involved and enthusiastic and have to cooperate beyond departmental borders, which may produce positive spin-off effects in teaching and research but also produce conflicts that have to be resolved.⁹
- In the horizontal integration, the interdisciplinary approach is mostly applied to the pre-clinical teaching in different Schools of Medicine.^{10–14} The Basic Medical Science Faculty along with representatives from the clinical sciences has to hold joint meetings to design a system based integrated curriculum for the first two years of the MBBS class.¹³ Sobral¹⁰ pointed out that the educational strategy in horizontal integration should be examined in reference to three features: the expected outcomes with regard to the competence of the graduate; the parameters of interdisciplinary integration; and the limiting factors for the development of interdisciplinary integration in medical education. Further, efforts have to be made both to bring clinical relevance to the basic sciences and to strengthen basic science in the clinical years.¹²
- There was partial integration in many Schools of Medicine where one or more courses were designed to include interdisciplinary material.^{15–17} The Oregon Health Sciences University (OHSU) School of Medicine developed a 2-year longitudinal course, called Principles of Clinical Medicine, integrating input from both basic and clinical science departments.¹⁵ Dauphinee & Martin¹⁶ described the integration of the biomedical and behavioral sciences, particularly to advance the understanding of the human brain. Rudich and Bashan¹⁷ described an interdisciplinary one-week course for the sixth-year medical students. In that course, students were required to conduct an in-depth investigation of a defined clinical topic.
- Geffen et al¹⁸ reviewed and evaluated horizontal, vertical, and full integration. He concluded that the fully integrated curriculum has been able to adapt to the changing

needs of medical education because its organization is relatively free from the constraints of departmental rivalry over resources. Brynhildsen et al compared the vertical with horizontal integration using student and faculty questionnaire.¹⁴ Students scored horizontal integration significantly higher than the teachers, whereas teachers scored vertical integration higher than students. Both students and teachers considered horizontal and vertical integration as highly important components of the undergraduate medical program.

Integrated Modular Curriculum of First Year MBBS

Preamble:

The curriculum of the UNIVERSITY is defined according to the Vision and Mission which is aligned to the national health needs. This Curriculum highlights the kind of physician expected to graduate from its medical colleges and Universities, outcomes and competencies and is based on best evidence in medical education.

RMU ensures that the minimum standards are achieved and the medical graduates are competent to practice medicine and ensure that graduates should be able to meet the health needs of the society. These graduates should be competent to apply evidence based medicine to health promotion, disease prevention, curative and rehabilitative care, using the bio-psycho-social model.

Curriculum:

Medical education is a life-long process and MBBS curriculum is a part of the continuum of education from pre-medical education, MBBS, proceeding to house job, post-graduation, continuous medical education and continuous professional development (CME/CPD). Curriculum development is a dynamic process and works best in an environment conducive to learning, and thrives on monitoring, quality assurance and continuous quality improvement. It consists of not only the formal curriculum but also the informal learning that takes place through day-to-day interactions of students with peers, teachers, colleagues, other health care providers, and the patients and their families. With the information explosion of the last century and scientific discoveries expanding the boundaries and restructuring the concepts of current knowledge, it is essential to work towards curricular integration, identify a core curriculum which all students must master, with plenty of opportunities for students to follow their own interest as electives.

The curricular model that has been grounded in educational theory and adult learning principles, which will promote learning of basic sciences in the clinical context. It ensure building of analytical and critical thinking, clinical and lifelong learning skills, and desired professional behaviors in our graduates by appropriate multi-modal teaching, learning, and assessment and feedback strategies.

Competencies of Medical Graduate Required By PM&DC

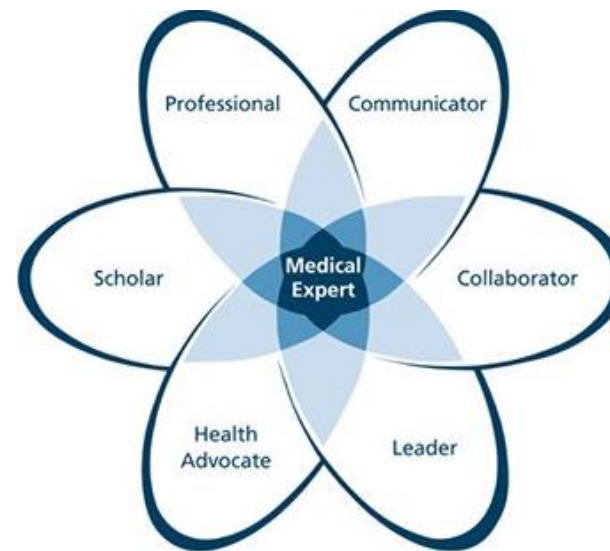
PM&DC outlines the guiding principles for undergraduate medical curriculum and has defined the generic competencies and desired outcomes are required for a medical graduate to provide optimal health care, leading to better health outcomes for patients and societies. These generic competencies set the standards of care for all physicians, and form a part of the identity of a doctor. Each competency describes a core ability of a competent physician. These competencies provide a framework for the development of educational programs throughout the physicians learning continuum, from undergraduate MBBS level, to postgraduate and continuing professional development (CPD).

Graduates of medical and dental colleges of Pakistan should be able to demonstrate four main outcomes: those of a competent medical practitioner, a professional, a researcher, a role model leader; demonstrating competencies of a seven star doctor.

Framework OF MBBS Programme Followed By RMU:

To produce **seven-star doctor** who has following competencies;

1. Skillful
2. Knowledgeable
3. Community health promoter
4. Critical thinker
5. Professional and role model
6. Researcher
7. Leader



Seven-Star Doctor Model

Integrated Curriculum Design of MBBS Programme of RMU

Two designs of the MBBS curriculum are acceptable by PMC/PMDC.

System Based (Preferred) with horizontal and vertical integration. The curriculum of each Clinical Discipline must emphasize Health Promotion and Disease Prevention, besides Curative Health Care.

RMU has opted for system based modular curriculum.

The Module: Module is the smallest unit of Curriculum both in the System- Based and Subject-Base (topic-based) Curricula. Modules are taught as a continuous block or as a longitudinal theme and assessments is carried out at the end of each module.

The System-Based Curriculum made up of —Modules, where each module is based upon organ-system(s) of the body. In each module, the Basic and Clinical Sciences are taught and learned in an integrated fashion. In RMU we are following the system based curriculum.

The Module should explicit makes:

Title of Module of a System 2) Learning Objectives, 3) Allocated Time in weeks/Hours and Credit Hours, 4) the name of the Coordinator, 5) Teaching Faculty (regular/visiting) 6) Learning Sites, 8) Modes of Information Transfer, 9) List of the Recommended Books, 10) Assessment strategies, and 11) Strategies for Monitoring and Improvement.

Learning Objectives: Learning Objectives are defined for each module. They are Specific, Measurable, Achievable, Relevant to the desired competencies (Outcomes) of the PMC Curriculum and Time bound (SMART), related to level of the learner and the three main domains.

Level of the Learner: While developing the curriculum, the learning objectives are according to the desired level of the learner, and the assessment systems must assess the knowledge, skills and attitudes to be achieved for that level.

Cognition Domain (Knowledge)

- C1 Recognition and Recall
- C2 Interpretation and application
- C3 Problem-solving (analysis, synthesis and judgment)

Psychomotor Domain (Skills)

- P1 Observe
- P2 Assist in the procedure

- P3 Perform under supervision P4 Perform independently

Affective Domain (Attitudes, Values, Behaviours)

Learning Sites and Strategies: The University ensures student-centered active learning in the context of real problems, patients and the community. It may take many forms, for example, -Problem Based Learning, -Case-based Learning and-Community Oriented Practices. Appropriate learning sites and Modes of Information Transfer are selected.

1. Large Group interactive session
2. Logbook
3. On-line courses
4. Photographs, Slides and Software
5. Practical exercises.
6. Self-Learning: Medical Colleges/Universities must provide sufficient opportunities for self- learning in the curriculum
7. Small Group Learning
8. Student Assignments and Projects
9. Student Presentations
10. Videos
11. Others.

Subjects / Rotations / Disciplines in the Curriculum

1. Anatomy
2. Physiology
3. Biochemistry
4. Pharmacology
5. Pathology
6. Community Medicine Medicine and Allied Specialities
7. Paediatric Medicine
8. Surgery and Allied Specialties
9. Obstetrics and Gynaecology
10. Ophthalmology
11. Otolaryngology
12. Behavioral Sciences
13. Medical Ethics
14. Professionalism.
15. Communication Skills
16. Radiology

17. Research Methods

18. Islamiyat and Pakistan Studies (as per HEC Guidelines)

19. The Holy Quran Translation (as per HEC Guidelines)

Theoretical and Practical Learning: Approximate allocation of time for Theoretical and Practical Learning is based on the ratio of contact hours (theory: practice) Basis Sciences 50:50

Credit Accumulation and Transfer System: Credit Hour is Academic Currency. Medical Colleges should use the notional learning hours concept for defining a credit. For example, in the European Credit Transfer System (ECTS) 1, –one ECTS is equivalent to 25-30 student learning hours.

Allocation of Hours and Credits in the MBBS Curriculum One Academic Year = 9 months = 36 weeks Academic Week = 423 hours/week (= 1512 hours/year = 7560 hours in 5 years. According to ECTS, where 25 student learning hours equals one credit, one year of the MBBS programme (1512 hours) equals approximately 60 Credits (1512 / 25 = 60). When one year (36 weeks) is divided into two (2) Semesters of 18 weeks each, each semester will have 30 Credits. The MBBS programme will have a total of 300 credits (7560 hours / 25 student learning hours).

Teacher-Student Ratio: As per guidelines of the PMC/PMDC but in RMU we are working with less human resource.

Minimum Attendance: 75% attendance is required from each student for examination subject and non-examination subjects, in order to be eligible to take the module or annual examinations.

Assessments and Examinations:

For Assessment details there is separated document that is part of curriculum.

Programme Administration

- Each Module / clerkship has its own Teaching Faculty with one coordinator and three co-coordinators.
- All such coordinators/heads shall constitute –Module Team chaired by Dean Basic Sciences.
- Responsibilities of the Curriculum Committee are given in TORs.

Continuous Quality Improvement of MBBS Programme: The effectiveness of the curriculum in achieving the goals, learning outcomes and objectives will be measured by:

1. Self-Monitoring by the Coordinator/head of each module clerkship/rotation/course and reported to the Coordinator/head of the MBBS Curriculum Coordination Committee *every year*, as required by HEC
2. Self-Assessment by the Institution by appointing a peer review committee to evaluate the MBBS Programme Examination Subject (13 subjects), *every 2-3 years*, reported as –Self-Assessment Report (SAR) of HEC
3. External review (Reaccreditation) *every 5 years* by PMC.

Institutional Responsibilities for Learning Resources:

RMU provides following resources:

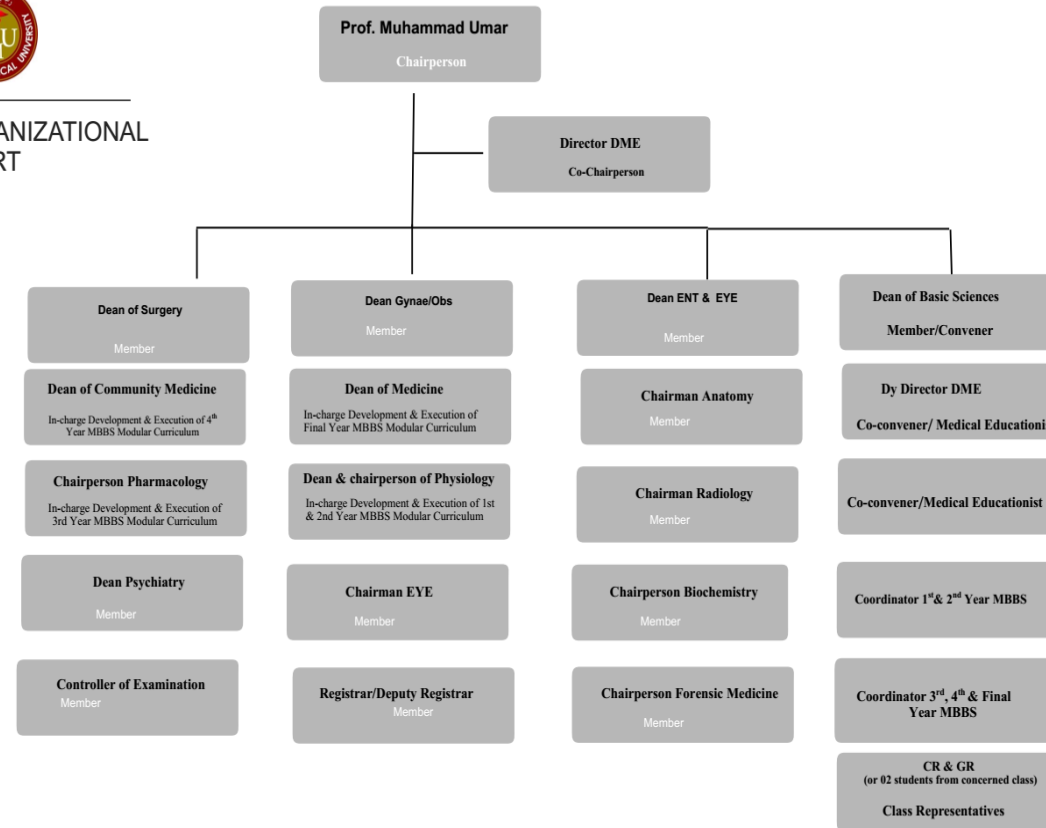
1. An enabling educational environment conducive to learning
2. Library with books, Journals, e-library services, appropriate software and others
3. Skills learning and practice sites, equipment and opportunities
4. Student support programs
5. Extracurricular activities
6. Financial Assistance for deserving students.

Extra-Curricular Activities: Medical Colleges/Universities must provide sufficient opportunities for extracurricular activities which RMU provides as sports week.

Organogram of Organizational Chart of Curriculum Management



ORGANIZATIONAL CHART



Rawalpindi Medical University Curriculum Committee

The following faculty members of the Rawalpindi Medical University are hereby nominated for Curriculum Committee to supervise development, implementation and feedback evaluation of all levels of the curriculum as per PM&DC curriculum guidelines including course content and subject wise teaching hours. They will perform duties as mentioned against each.

1.	Prof. Dr. Muhammad Umar Vice Chancellor	Chairperson
2.	Prof. Dr. Jahangir Sarwar (CHPE) Principal / Dean of Surgery & Allied	Co-Chairperson
3.	Prof. Dr. Muhammad Rai Asghar (MHPE) Controller of Examination Director Department of Medical Education	Member
4.	Prof. Dr. Lubna Ejaz (MHPE) Dean & Professor of Gynae-Obstetrics	Member
5.	Prof. Dr. Nosheen qureshi Professor of ENT	Member
6.	Prof. Dr. Naeem Akhtar Professor of pathology	Member/Convener
7.	Prof. Dr. Mobeena Dohdhi Professor of pathology	Member
8.	Dr. Asma Khan Head of Pharmacology	Member/Co-convener In-charge Development & Execution of 3 rd Year MBBS Modular Curriculum
9.	Dr. Syed Arshad Sabir Head of Community Medicine & Public Health	Member In-charge Development & Execution of 4 th Year MBBS Modular Curriculum

10.	Prof. Dr. Muhammad Khurram Dean of Medicine & Allied	Member In-charge Development & Execution of Final Year MBBS Modular Curriculum
11.	Prof. Dr. Samia Sarwar Head of Physiology Department	Member
12.	Prof.Dr. Asad Tameezudin (MHPE) Head, Institute of Psychiatry	Member
13.	Prof. Dr. Fuad Niazi (MHPE) Dean of Eye and ENT, Professor of Ophthalmology	Member
14.	Prof.Akram Randhawa Head of Bioethics Department	Member
15.	Prof. Dr. Nasir Khan Professor Head of Radiology Department	Member
16.	Dr. Romana Head of Forensic Medicine Department	Member
17.	Prof. Dr. Ayesha Yousaf (CHPE) Head of Anatomy Department	Member Dean Basic Sciences
18.	Prof.Ifra Saeed (CHPE) Additional Director Department of Medical Education	Member/Co-convener Incharge Curriculum Pre-clinical years In-charge Development & Execution of 1 st & 2 nd Year MBBS Modular Curriculum
19.	Dr. Aneela Jamil Assistant Professor	Member Head of Biochemistry Department
20.	Dr. Rabia Khalid Registrar/Assistant Registrar	Member

21.	Dr. Fahd Anwar Focal Person The Holy Quran Translation Curriculum	Member
22.	Mufti Naeem Ahmad Sherazi Incharge and focal person Islamiyat Curriculum	Member
23.	Qari Aman ullah Focal person Pak studies curriculum	Member
24.	Dr. Khaula Noreen (MHPE) Focal Person Research Curriculums of University	Member
25.	Dr. Sidra Hamid (DHPE) Assistant Prof. Physiology/Assistant Director DME	Curriculum Coordinator 1 st & 2 nd year MBBS
26.	Dr. Omaima Asif (CHPE) Demonstrator Pharmacology/ Assistant Director DME	Curriculum Coordinator 3 rd , 4 th & Final Year MBBS
27.	CR & GR (or 02 students from concerned class)	Class Representatives

Modules of 1st Year MBBS

Sr. No	Module	Time Scheduled	Blocks
1.	Foundation Module	6 Weeks	I
2.	Musculoskeletal-I Module	05 Weeks	
3.	Musculoskeletal-II Module	05 Weeks	II
4.	Blood & Immunity Module	05 Weeks	
5.	Cardicavascular System Module	05 Weeks	III
6.	Respiratory Module	04 Weeks	

Academic Calendar



DEPARTMENT OF MEDICAL EDUCATION RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI

DME/NO:

Date: / / 2023

Academic Calendar for First Year MBBS (Batch-50) 2022-2023

BLOCKS	BLOCK-I		BLOCK II		BLOCK III		Revision Module	Schedule Of Send Up And Professional Examination			
	Foundation Module	MSK-I	MSK - II	Blood and Immunity	CVS	Respiration		Prep leaves for send up	Send up	Prep leaves for professional examination	Professional examination
Duration in Weeks	06	05	05	05	05	04	02				
Dates	13-Feb – 25 th March 2023	27 th March- 13 th May 2023	17 th May – 24 th June 2023 (Sports Week 22 nd – 27 th May)	24 th July to 26 th August 2023 (26 th June– 22 nd July Summer Vacation)	28 th Aug to 30 th Sep 2023	2 nd Oct to 28 th Oct 2023	30 th Oct – 11 th Nov	(12 th Nov to 25 th November (14 days)	27 th Nov, 2023 to 09 th Dec, 2023 (14 Days)	(10 th Dec to 31 st Dec, 2023) (20 days)	1 st Jan 2023 to 22 nd January, 2024 (22 days) Annexure I

• Vacation Schedule during Academic Year 2023

- 14th – 21st April - Spring Vacation
 - 22nd – 24th April Eid ul Fitr Holidays
 - 22nd – 27th May - Students week
 - 26th June – 22nd July - Summer Vacation
- Note : All Dates are subject to change

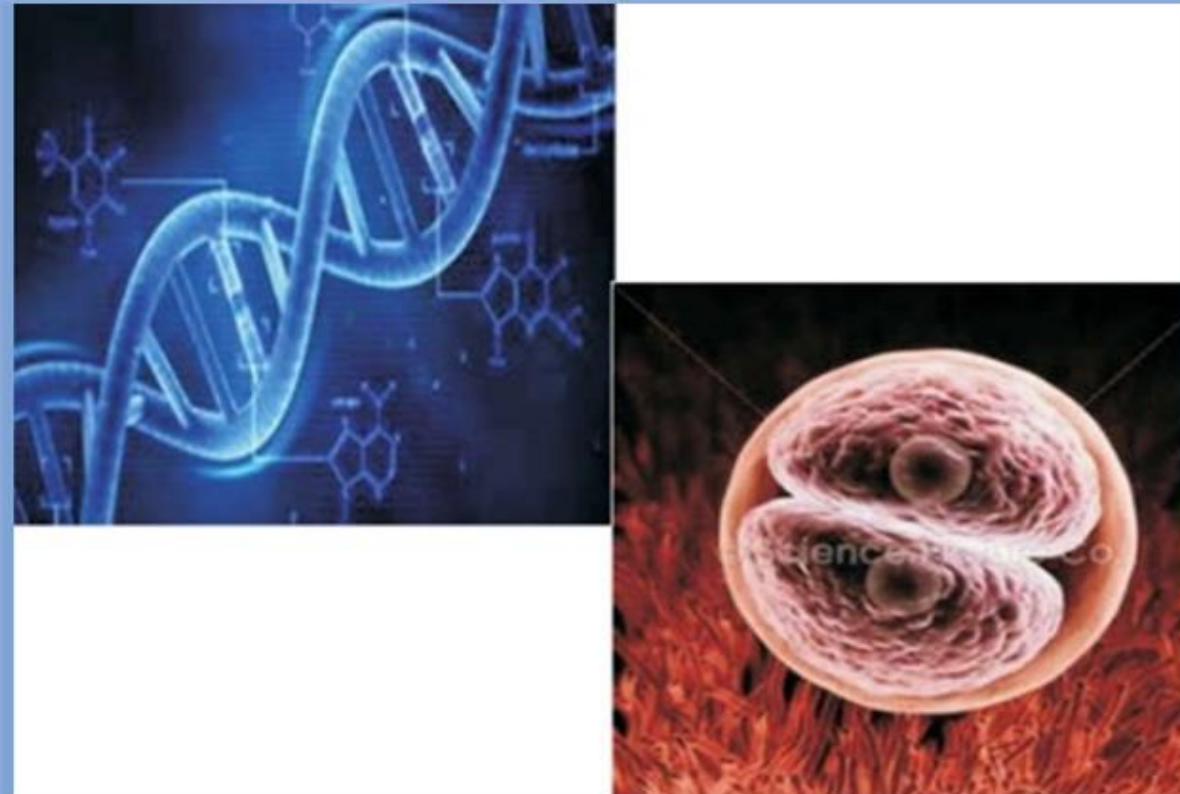
SECTION-II


Study Guides



Foundation Module

Study Guide
First Year MBBS 2022 - 2023



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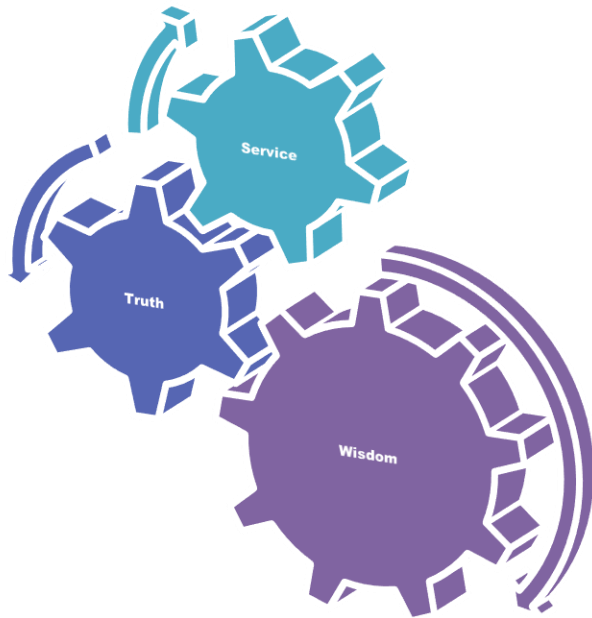
Prepared By	Reviewed By	Approved By
Additional Director Medical Education, Asst. Director Medical Education,	Curriculum Committee	Vice Chancellor

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RMU Motto



University Moto, Vision, Values & Goals

Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

First Year MBBS 2023

Study Guide

Foundation Module

Discipline wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
1	<ul style="list-style-type: none"> Anatomy 	Introduction To General Anatomy	General Embryology <ul style="list-style-type: none"> Introduction To Human Development Oogenesis Spermatogenesis Female Reproductive Cycles Ovulation And Fertilization Cleavage And Blastocyst Formation Development Of Mammary Gland 	General Histology <ul style="list-style-type: none"> Types Of Epithelium Specialization Of Apical Cell Surface Intercellular Junctions and Adhesions Glandular Epithelium Histology Of Mammary Gland 	<ul style="list-style-type: none"> Anatomicomedical Terminologies I Anatomicomedical Terminologies II (Anatomical Terms And Axis Of Movements) Anatomicomedical Terminologies III (Cell and Tissues) Anatomicomedical Terminologies IV (Skin & Body System) Clavicle Scapula Humerus Anterior Axioappendicular Muscles Posterior Axioappendicular Muscles Axilla Brachial Plexus Brachial Plexus Injuries Breast Sternoclavicular And Acromioclavicular Joints Radiograph And Surface Anatomy of Axioappendicular Region
	<ul style="list-style-type: none"> Biochemistry 	<ul style="list-style-type: none"> Cell And Cell Organelles, Cell Membrane and Transport Across Cell Membrane, Physicochemical Properties, Enzymes, Cancer, Nucleic Acid Chemistry, Genetics 			
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> Functional Organization of The Human Body and Control of the "Internal Environment The Cell and Its Functions Genetic Control of Protein Synthesis, Cell Function, And Cell Reproduction Transport Of Substances Through the Cell Membrane 			
	<ul style="list-style-type: none"> Vertical components 	<ul style="list-style-type: none"> The Holy Quran Translation Component 			
	<ul style="list-style-type: none"> Bioethics & Professionalism 	<ul style="list-style-type: none"> Introduction to history of medical ethics 			

	<ul style="list-style-type: none"> • Artificial Intelligence 	<ul style="list-style-type: none"> • Introduction to Artificial Intelligence
	<ul style="list-style-type: none"> • Family Medicine 	<ul style="list-style-type: none"> • Introduction to Family Medicine & its application in health care system
	<ul style="list-style-type: none"> • Research Innovation (IUGRC) 	<ul style="list-style-type: none"> • Research I Introduction of health research process • Research II characteristic of reserch process • Research III Basis of ethics in health research • Research IV Basics of ethics in medical reserch
	<ul style="list-style-type: none"> • Behavioral Sciences 	<ul style="list-style-type: none"> • Introduction to Behavioral Sciences • Management of stress
	<ul style="list-style-type: none"> • Vertical Integration 	<p>Clinically content relevant to Foundation module</p> <ul style="list-style-type: none"> • Opening ceremony (DME) • Introduction To Different Teaching Strategies, Role Of Team Leader Facilitator And Students SGD/LGIS/TBL/PAL/INTERNET & Literature Group activity (DME) • Leadership Professionalism (DME) • Orientation to integrated modular system (DME) • Lecture on feedback (DME) • Mission and vision (DME) • Introduction to Pharmacology • Routs of drug administration (Pharmacology) • Absorption of drugs (Pharmacology) • Factors affecting drug absorption (Pharmacology) • Distribution of drugs (Pharmacology) • Introduction to Pathology • Cellular response to injury (Pathology) • Intracellular accumulations (Pathology) • Pigments (Pathology) • Free radical and reactive oxygen species (Pathology) • Irreversible cell injury/apoptosis (Pathology) • Genetic disorders (Pathology) • Introduction to Community Medicine (Community Medicine) • Introduction to medicine (Medicine) • History of medicine (Medicine) • Medicine and allied subjects (Medicine) • Chromosomal abressions (Medicine) • History taking and general physical examination (Medicine)

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Foundation Module Team

Module Name : Foundation Module
 Duration of module : 06 Weeks
 Coordinator : Dr. Mohtasham Hina
 Co-coordinator : Dr. Zeneera Saqib
 Reviewed by : Module Committee

Module Committee			Module Task Force Team	
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator Dr. Mohtasham Hina (Associate Professor of Anatomy)
2.	Director DME	Prof. Dr. Rai Muhammad Asghar	2.	DME Focal Person Dr. Sidra Hamid
3.	Convener Curriculum	Prof. Dr. Naeem Akhter	3.	Co-coordinator Dr. Zeneera Saqib (Demonstrator of Anatomy)
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf	4.	Co-Coordinator Dr. Uzma kiayani (Senior Demonstrator of Physiology)
5.	Additional Director DME	Prof. Dr. Ifra Saeed	5.	Co-coordinator Dr. Shahrukh Khan (Senior Demonstrator of Biochemistry)
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar	DME Implementation Team	
7.	Chairperson Biochemistry	Dr. Aneela Jamil		
8.	Focal Person Anatomy First Year MBBS	Prof. Dr. Ayesha Yousaf	1.	Director DME Prof. Dr. Rai Muhammad Asghar
9.	Focal Person Physiology	Dr. Sidra Hamid	2.	Implementation Incharge 1st & 2 nd Year MBBS & Add. Director DME Prof. Dr. Ifra Saeed
10.	Focal Person Biochemistry	Dr. Aneela Jamil	3.	Deputy Director DME Dr. Shazia Zaib
11.	Focal Person Pharmacology	Dr. Zunera Hakim	4.	Module planner & Implementation coordinator Dr. Sidra Hamid
12.	Focal Person Pathology	Dr. Asiya Niazi	5.	Editor Muhammad Arslan Aslam
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir		
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom		
15.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar		
16.	Focal Person Family Medicine	Dr. Sadia Khan		

Module I - Foundation Module

Introduction: In the Foundation Module students will develop understanding of the basic concepts of cell Physiology, Biochemistry, Anatomy, Pathology, Pharmacology, Community medicine and study skills through an integrated course.

Rationale: The foundation module is designed to impart basic knowledge about the normal structure, organization, functions and development of human body. This knowledge will serve as a base on which the student will construct further knowledge about the etiology, pathogenesis and prevention of diseases; the principles of their therapeutics and management.

Module Outcomes

Each student will be able to:

Knowledge

- Acquire the basic science knowledge and terminology necessary to understand the development and functioning of normal structures of human body starting from biochemical level to organ system level, as well as the concepts of diseases in the community and drug dynamics.
Use technology based medical education including
- **Artificial Intelligence.**
Appreciate concepts & importance of:
- **Family Medicine**
- **Biomedical Ethics**
- **Research.**

Skills

- Identify different anatomical planes and correlate the importance of these with clinical medicine.
- Identify various apparatus used in lab.
- Preparation and identification of microscopic slides.
- Preparation of solutions of various strengths.

Attitude

- Demonstrate **professional attitude, team-building spirit and good communication skills.**

This module will run in 6 weeks' duration. The content will be covered through introduction of topics. Instructional strategies are given in the timetable and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning

Methodologies/Strategies

- Large Group Interactive Session (LGIS)
- Small Group Discussion (SGD)
- Self-Directed Learning (SDL)
- Case Based Learning (CBL)
- Problem- Based Learning (PBL)
- Skill Labs/Practicals (SKL)

Tables & Figures

- Table1. Domains of learning according to Blooms Taxonomy
- Figure 1. Prof Umar's Model of Integrated Lecture
- Table2. Standardization of teaching content in Small Group Discussions
- Table 3. Steps of taking Small Group Discussions
- Figure 2. PBL 7 Jumps Model

Table1. Domains Of Learning According to Blooms Taxonomy

Sr. #	Abbreviation	Domains of learning
1.	C	Cognitive Domain: knowledge and mental skills.
	• C1	Remembering
	• C2	Understanding
	• C3	Applying
	• C4	Analyzing
	• C5	Evaluating
	• C6	Creating
2.	P	Psychomotor Domain: motor skills.
	• P1	Imitation
	• P2	Manipulation
	• P3	Precision
	• P4	Articulation
	• P5	Naturalization
3.	A	Affective Domain: feelings, values, dispositions, attitudes, etc
	• A1	Receive
	• A2	Respond
	• A3	Value
	• A4	Organize
	• A5	Internalize

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

The large group interactive session is structured format of Prof Umar Model of Integrated lecture. It will be followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explain the underlying phenomena through questions, pictures, videos of patients, interviews and exercises, etc. Students are actively involved in the learning process.

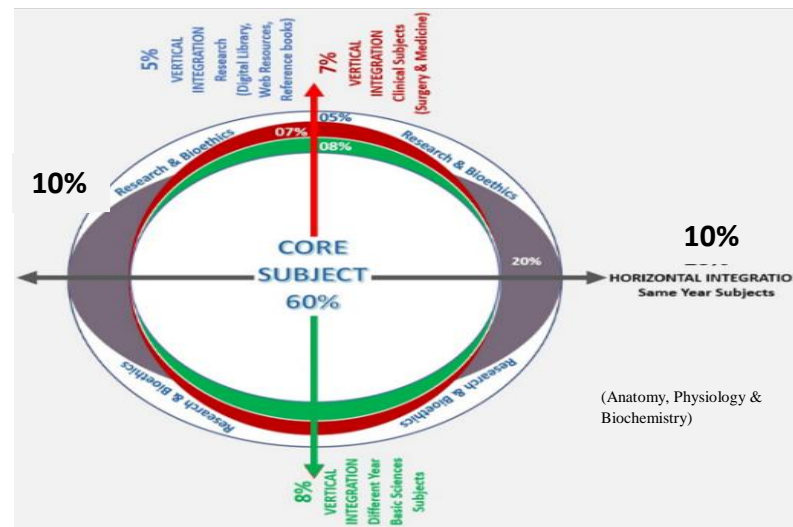


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

This format helps students to clarify concepts acquire skills and attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics or power point presentations. Students exchange opinions and apply knowledge gained from lectures, SGDs and self study. The facilitator role is to ask probing questions, summarize and help to clarify the concepts.

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementaion of Small Group Discussions

Step 1	Sharing of Learning objectives by using students Study guides	First 5 minutes
Step 2	Asking students pre-planned questions from previous teaching session to develop co-relation (these questions will be standardized)	5minutes
Step 3	Students divided into groups of three and allocation of learning objectives	5minutes
Step 4	ACTIVITY: Students will discuss the learning objectives among themselves	15 minutes
Step 5	Each group of students will present its learning objectives	20 min
Step 6	Discussion of learning content in the main group	30min
Step 7	Clarification of concept by the facilitator by asking structured questions from learning content	15 min
Step 8	Questions on core concepts	
Step 9	Questions on horizontal integration	
Step 10	Questions on vertical integration	
Step 11	Questions on related research article	
Step 12	Questions on related ethics content	
Step 13	Students Assessment on online MS teams (5 MCQs)	5 min
Step 14	Summarization of main points by the facilitator	5 min
Step 15	Students feedback on the SGD and entry into log book	5 min
Step 16	Ending remarks	

Self Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be defined
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:
 - i Will be online on LMS (Mid module/ end of Module)
 - ii.OSPE station

Case Based Learning (CBL)

- It's a learner centered model which engages students in discussion of specific scenarios that typically resemble real world examples.
- Case scenario will be given to the students
- Will engage students in discussion of specific scenarios that resemble or typically are real-world examples.
- Learning objectives will be given to the students and will be based on
 - i. To provide students with a relevant opportunity to see theory in practice
 - ii. Require students to analyze data in order to reach a conclusion.
 - iii. Develop analytic, communicative, and collaborative skills along with content knowledge.

Problem Based Learning (PBL)

- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.
- This problem is what drives the motivation and the learning.

The 7- Jump-Format of PBL (Masstricht Medical School)	
Step 7	Synthese & Report
Step 6	Collect Information from outside
Step 5	Generate learning Issues
Step 4	Discuss and Organise Ideas
Step 3	Brainstorming to Identify Explanations
Step 2	Define the Problem
Step 1	Clarify the Terms and Concepts of the Problem Scenario
	Problem- Scenario

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide	10-15 minutes
Practical work	25-30 minutes
Write/ draw and get it checked by teacher	20-25 minutes
05 mcqs at the end of the practical	10 minutes
At the end of module practical copy will be signed by head of department	
At the end of block the practical copy will be signed by	
Head of Department	
Dean	
Medical education department	
QEC	

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- **Introduction to RMU and Disciplines**
- **Medical Education and Integrated Disciplines**
- **Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)**
- **Large Group Interactive Session:**
 - Anatomy (LGIS)
 - Physiology (LGIS)
 - Biochemistry (LGIS)
- **Small Group Discussions**
 - Anatomy (SGD)
 - Physiology (SGD)
 - Biochemistry (SGD)
- **Self Directed Topic, Learning Objectives & References**
 - Anatomy (SDL)
 - Physiology (SDL)
 - Biochemistry (SDL)
- **Skill Laboratory**
 - Anatomy
 - Physiology
 - Biochemistry

Orientation Week

Introduction to RMU and Disciplines

Medical Education and Integrated Disciplines				
Topic	Facilitator	Learning Objectives	Teaching Strategy	Assessment Tool
Introduction to RMU and Allied Hospitals	Vice Chancellor	Honorable VC will welcome and introduce the University and Allied Hospitals.	LGIS	MCQS
The students will be able to:				
Introduction to Medical Education Department Introduction to Integrated Modular System and Foundation Module	Assistant Director DME	• Introduce DME	LGIS	MCQS
		• Define Medical Education		
		• Discuss its role		
		• Describe CME		
		• Appreciate role of DME in their curriculum		
		• Appreciate role of DME in attendance monitoring		
		• Illustrate the application		
		• Leave submission process		
		• Outline the RMU Curriculum structural organization, (integrated modular system)		
• Describe Learning resources used in study guides				
Introduction to Basic Sciences	Lecture by HODs	• Define Anatomy	LGIS	MCQS
		• Define Physiology		
		• Define Biochemistry		
		• Define Pathology		
		• Define Community Medicine		
		• Define Forensic Medicine		
		• Define Pharmacology		
Introduction to Medicine & Allied	Lecture by Dean of Medicine & Allied	• Define medicine	LGIS	MCQS
		• Discuss History of medicine		
		• Describe Islamic concepts of medicine		
		• Identify Basic sciences involved in medicine		
		• Identify Clinical subjects and their role		

		<ul style="list-style-type: none"> Describe practice of medicine 		
Introduction To Teaching And Learning Strategies With Emphasis On SGD/LGIS/TBL (Team base learning)/PAL (Peer Assisted learning)/Internet & Literature Search	Basic Science Team & DME	<ul style="list-style-type: none"> Differentiate between various Teaching & Learning strategies 	LGIS	MCQS
		<ul style="list-style-type: none"> Describe the process 		
		<ul style="list-style-type: none"> Enlist different roles of students and facilitator in mentioned teaching sessions 		
Introduction To Use Of Laboratory Facilities / Equipment And Safety Measures (Biochemistry and Pathology)	Team members (Biochemistry and Pathology)	<ul style="list-style-type: none"> Recall precautionary measures mandatory during practical sessions and skill lab 	LGIS	MCQS
		<ul style="list-style-type: none"> Recall safety measures during blood handling 		
		<ul style="list-style-type: none"> Demonstrate use of various glass ware 		
		<ul style="list-style-type: none"> Demonstrate use of lab instruments 		
Study Skills-I (Medical Educationist And Behavioral Sciences)	Behaviour Science and DME team member	<ul style="list-style-type: none"> Define study skills or study strategies (how to study?) 	LGIS	OSPE
		<ul style="list-style-type: none"> Describe the: 		
		<ul style="list-style-type: none"> Methods based on memorization such as rehearsal and rote learning 		
		<ul style="list-style-type: none"> Methods to retain the content in long term memory 		
		<ul style="list-style-type: none"> Methods based on communication skills e.g., reading and listening 		
Study Skills-II	Behaviour Science and DME team member	<ul style="list-style-type: none"> Principles of TBL & PAL 	LGIS	MCQS
		<ul style="list-style-type: none"> Describe the: 		
		<ul style="list-style-type: none"> Methods based on condensing information, summarizing and the use of keywords 		
		<ul style="list-style-type: none"> Methods based on visual imagery 		
		<ul style="list-style-type: none"> Methods based on acronyms and pneumonics 		
Islam and Medical Science	Mufti Naem sab	<ul style="list-style-type: none"> Discuss role of Islam and importance of Islam in Medical Science 	LGIS	MCQS

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End of The Lecture the Student Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to General Anatomy	<ul style="list-style-type: none"> Define the term Anatomy and its various branches 	C1	LGIS	SAQ MCQ VIVA
	<ul style="list-style-type: none"> Define different terminologies related to Anatomy 	C1		
	<ul style="list-style-type: none"> Describe different Anatomical planes and directions in relation to anatomical position 	C1		
	<ul style="list-style-type: none"> Elaborate different phases in life span of man 	C2		
	<ul style="list-style-type: none"> Define basic tissues of human body 	C1		
	<ul style="list-style-type: none"> Discuss general outlines and functions of basic tissues 	C2		
	<ul style="list-style-type: none"> Describe formation of different systems of body 	C1		
Embryology				
Introduction to Human development	<ul style="list-style-type: none"> Discuss significance and importance of studying Embryology 	C2	LGIS	SAQ MCQ VIVA
	<ul style="list-style-type: none"> Define different terminologies to describe developmental stages 	C1		
	<ul style="list-style-type: none"> Describe series of critical events that take place during embryonic development 	C1		
	<ul style="list-style-type: none"> Appreciate difference between embryonic and fetal period 	C2		
	<ul style="list-style-type: none"> State chromosomal theory of inheritance 	C1		
	<ul style="list-style-type: none"> Discuss common chromosomal abnormalities 	C2		
Oogenesis	<ul style="list-style-type: none"> Discuss role of female hormones during oogenesis 	C2	LGIS	SAQ MCQ VIVA
	<ul style="list-style-type: none"> Describe different stages of oogenesis 	C1		
	<ul style="list-style-type: none"> Correlate clinical aspects of gametogenesis 	C3		
	<ul style="list-style-type: none"> To understand the bio-physiological aspects of gametogenesis 	C2		
	<ul style="list-style-type: none"> Able to read a relevant research article 	C3		
	<ul style="list-style-type: none"> Know to use digital library 	C3		
Spermatogenesis	<ul style="list-style-type: none"> Define spermatogenesis. 	C1	LGIS	SAQ MCQ VIVA
	<ul style="list-style-type: none"> Describe different phases of spermatogenesis 	C1		
	<ul style="list-style-type: none"> Discuss stages of spermiogenesis 	C2		
	<ul style="list-style-type: none"> Elaborate functions of male hormones during spermatogenesis 	C2		
	<ul style="list-style-type: none"> Able to read a relevant research article 	C3		
	<ul style="list-style-type: none"> Know to use digital library 	C3		
Embryology Female Reproductive	<ul style="list-style-type: none"> understand Ovarian and Uterine cycle 	C1	LGIS	SAQ
	<ul style="list-style-type: none"> Correlate Ovarian and Uterine cycles 	C3		

Cycles	• Describe different phases of Ovarian and Uterine cycles	C1		MCQ VIVA
	• Enumerate female sex hormones	C1		
	• Discuss functional significance of female reproductive hormones in reproductive cycles	C2		
	• Discuss the anovulatory cycle in female	C3		
	• Understand the bio-physiological aspects female reproductive cycle	C2		
	• Able to read a relevant research article	C3		
	• Know to use digital library	C3		
Embryology Ovulation and Fertilization	• Describe follicular development, ovulation and subsequent events in ovary	C1	LGIS	SAQ MCQ VIVA
	• Give an account on role of leutinizing hormone in ovulation	C1		
	• Discuss capacitation in female genital tract	C2		
	• Describe different phases and results of fertilization	C1		
	• Enlist causes of infertility.	C1		
	• Enlist different technologies of assisted fertilization	C1		
	• Discuss different techniques of assisted reproduction with special emphasis on IVF	C3		
	• Discuss the bio-physiological aspects of ovulation and fertilization	C2		
	• Able to read a relevant research article	C3		
	• Know to use digital library	C3		
Embryology Cleavage and Formation of Blastocyst	• Define cleavage	C1	LGIS	SAQ MCQ VIVA
	• Define compaction	C1		
	• Describe blastocyst formation	C1		
	• Understand the bio-physiological aspects of cleavage and blastocyst	C2		
	• Correlate clinical condition of cleavage and blastocyst formation	C3		
	• Able to read a relevant research article	C3		
	• Know to use digital library	C3		
Embryology Development of mammary gland	• Describe the Sources of development of mammary gland	C1	LGIS	SAQ MCQ VIVA
	• Discuss different stages of activity of mammary gland	C2		
	• Understand the bio-physiological aspects of mammary gland	C2		
	• Correlate clinical conditions of mammary gland	C3		
	• Able to read a relevant research article	C3		
	• Know to use digital library	C3		

Histology				
Types of Epithelium	• Define Epithelium	C1	LGIS	SAQ MCQ VIVA
	• Discuss general features of Epithelial cells (basal, apical and lateral surfaces)	C2		
	• Classify epithelium	C2		
	• Explain the histological structure of simple epithelium	C2		
	• Describe the location and functions of simple epithelium	C1		
	• Classify stratified epithelium.	C2		
	• Describe the functions and distribution of stratified epithelium	C1		
	• Appreciate the differences between stratified and psuedostratified epithelium	C2		
	• Describe characteristics of transitional epithelium	C2		
	• Correlate clinical aspects of different types of epithelia	C3		
	• To understand the bio-physiological aspects of different types of epithelia	C3		
	• Able to read a relevant research article	C3		
• Know to use digital library	C3			
Specializations of apical cell surface	• Enumerate different apical modifications of cells	C1	LGIS	SAQ MCQ VIVA
	• Describe histological structure of each apical modification.	C1		
	• Discuss functions of each type of apical modifications	C2		
	• Correlate clinical aspects of Specializations of apical cell surfaces	C3		
	• Understand the bio-physiological aspects of specilizations of apical cell surface	C2		
	• Able to read a relevant research article	C3		
	• Know to use digital library	C3		
Histology Intercellular junctions and adheussions	• Enlist causes of infertility.	C1	LGIS	SAQ MCQ VIVA
	• Enumerate different cell junctions	C1		
	• Describe histological structure of different cell junctions	C1		
	• Understand the bio-physiological aspects of intercellular junctions and adhesions	C2		
	• Able to read a relevant research article	C3		
Histology Glandular Epithelium	• Know to use digital library	C3	LGIS	SAQ MCQ VIVA
	• Define gland	C1		
	• Compare between exocrine and endocrine glands with examples	C2		
	• Classify glands on the basis of morphology, secretory product, and mode of secretion	C2		
	• Understand the bio-physiological aspects of glands	C2		
• Able to read a relevant research article	C3			

	<ul style="list-style-type: none"> • Know to use digital library 	C3		
Histology Development and histology of mammary gland	<ul style="list-style-type: none"> • Describe the Sources of development of mammary gland 	C1	LGIS	SAQ MCQ VIVA
	<ul style="list-style-type: none"> • Discuss the ultra structure of mammary gland 	C1		
	<ul style="list-style-type: none"> • Discuss different stages of activity of mammary gland 	C2		
	<ul style="list-style-type: none"> • Understand the bio-physiological aspects of mammary gland 	C2		
	<ul style="list-style-type: none"> • Correlate clinical conditions of mammary gland 	C3		
	<ul style="list-style-type: none"> • Able to read a relevant research article 	C3		
	<ul style="list-style-type: none"> • Know to use digital library 	C3		

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
Introduction to Physiology & Physiology Department	<ul style="list-style-type: none"> • Introduce faculty members 	C1	LGIS SGD	SAQ MCQ VIVA
	<ul style="list-style-type: none"> • Define physiology 	C2		
	<ul style="list-style-type: none"> • Classify different branches of physiology 	C2		
	<ul style="list-style-type: none"> • Explain the importance of physiology in medical and clinical sciences 	C1		
Cell physiology & Homeostasis	<ul style="list-style-type: none"> • Understand functional organization of human body from cell to systems 	C2	LGIS SGD	M SAQ MCQ VIVA
	<ul style="list-style-type: none"> • Differentiate between prokaryotes and eukaryotes. 	C2		
	<ul style="list-style-type: none"> • Discuss salient features of cell theory 	C2		
	<ul style="list-style-type: none"> • Define homeostasis 	C1		
Concept of Body Fluid and Internal Environment	<ul style="list-style-type: none"> • Describe homeostatic mechanisms of the major functional systems. 	C1	LGIS SGD	SAQ MCQ VIVA
	<ul style="list-style-type: none"> • Describe distribution of total body water 	C1		
	<ul style="list-style-type: none"> • Enlist the proportion of intra cellular and extra cellular fluids. 	C1		
	<ul style="list-style-type: none"> • Differentiate between ECF & ICF 	C2		
Homeostatic Control System I	<ul style="list-style-type: none"> • Recall Physical characteristics of normal ECF constituents 	C1	LGIS SGD	SAQ MCQ VIVA
	<ul style="list-style-type: none"> • Understand the concept of internal environment (which student can differentiate for unicellular and multi cellular organisms.) 	C2		
	<ul style="list-style-type: none"> • Describe the characteristic of control system of the body. 	C1		
	<ul style="list-style-type: none"> • Enlist four control mechanisms of body 	C1		
	<ul style="list-style-type: none"> • Understand the mechanism of positive feedback, negative feedback, feed forward control and adaptive control with examples. 	C2		

Homeostatic Control System II	• Recall control mechanisms	C1	LGIS SGD	SAQ MCQ VIVA
	• Give examples	C1		
	• Compare and contrast feed forward and adaptive mechanisms	C2		
	• Define gain of control system	C1		
	• Comprehend gain of the control system	C2		
	• Calculate gain of the feedback system and understand the significance of sign in the formula	C3		
Cellular organelles and cell functions	• Describe cytoskeleton & cell locomotion	C1	LGIS Group presentations	SAQ MCQ VIVA
	• Discuss functions of cilia and amoeboid movement	C2		
	• Describe the mechanism of ATP generation	C1		
	• Enlist three major processes of ATP consumption in the body	C1		
	• Understand cell ingestion and other independent roles of cell	C2		
Cell Membrane and Cell Organelles I & II	• Enlist functions of ER, golgi apparatus, lysosome & peroxosome, mitochondria	C1	LGIS SGD Group presentations	SAQ MCQ VIVA
	• Compare and contrast RER & SER, lysosomes & peroxisomes	C2		
	• Understand Docking mechanism	C2		
	• Discuss physiological importance of mitochondria & ATP	C2		
	• Describe the structure of cell membrane: fluid mosaic model	C1		
	• Enlist functions of cell membrane	C1		
	• Enlist membrane bound and non-membrane bound organelles	C1		
	• Differentiate between cytoplasm and cytosol	C2		
Cell membrane Ion channels, Transport across the cell membrane: Diffusion	• Enlist various types of ion channels	C1	LGIS SGD	SAQ MCQ VIVA
	• Enumerate modes of transport mechanism across the cell membrane	C1		
	• Define and discuss factors affecting diffusion	C1		
Transport across cell membrane: Osmosis	• Recall transport mechanism across the cell membrane with special emphasis on osmosis and osmotic pressure	C1	LGIS SGD	SAQ MCQ VIVA
	• Recall factors affecting osmosis	C1		
	• Comprehend the concept of moles and osmoles	C2		
	• Recall osmolarity of body fluids	C1		
	• Discuss tonicity	C2		
	• Comprehend concept of isotonic, hypertonic and hypotonic	C2		
Transport across	• Define active transport	C1	LGIS	SAQ

cell membrane: Active transport I & II	<ul style="list-style-type: none"> Classify active transport 	C2	SGD	MCQ VIVA
	<ul style="list-style-type: none"> Comprehend various types of active transport with examples with special emphasis on Na-K pump 	C2		
Structure of nucleus and ribosomes, Cell Division	<ul style="list-style-type: none"> Describe structure of nucleus and ribosome 	C1	LGIS PBL	SAQ MCQs VIVA
	<ul style="list-style-type: none"> Discuss vaults 	C2		
	<ul style="list-style-type: none"> Understand basic concepts about DNA and 	C2		
	<ul style="list-style-type: none"> RNA 	C1		
	<ul style="list-style-type: none"> Recall various types of RNA and their functions 	C1		
	<ul style="list-style-type: none"> Enlist and Draw steps of mitosis and meiosis 	C2		
	<ul style="list-style-type: none"> Comprehend role of different parts of chain of DNA as genes like TATA box 			
Genetics Transcription & Translation	<ul style="list-style-type: none"> Define & Explain Genetics, Transcription & Translation 		LGIS PBL	SAQ MCQs VIVA
	<ul style="list-style-type: none"> Describe Genetic control of protein synthesis 			
	<ul style="list-style-type: none"> Differentiate between apoptosis & Necrosis 			
Cellular control mechanism ,Cell cycle, Programmed cell death	<ul style="list-style-type: none"> Describe different cellular control mechanisms regarding gene regulation 	C1	LGIS PBL	SAQ MCQs VIVA
	<ul style="list-style-type: none"> Explain Cell differentiation, apoptosis and cellular changes in cancer 	C2		
Intracellular communication and cell junctions	<ul style="list-style-type: none"> Describe the structure of various intracellular connections 	C1	LGIS SGD	SAQ MCQ VIVA
	<ul style="list-style-type: none"> Give the physiological importance of cell junctions 	C1		
Signal Transduction	<ul style="list-style-type: none"> Describe the various 2nd messenger systems 	C1	LGIS	SAQ MCQ VIVA
	<ul style="list-style-type: none"> Discuss physiological significance 	C2		

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning domain	Teaching strategy	Assessment tool
Cell organelles				
Cell and cell organelles	<ul style="list-style-type: none"> Explain composition of normal cell 	C2	LGIS	SAQ MCQ VIVA
	<ul style="list-style-type: none"> Describe methods to separate different organelles of cell Describe structure, functions and marker enzymes of ER & Golgi 	C2 C2		
	<ul style="list-style-type: none"> apparatus Describe structure, functions and marker enzymes of lysosome, peroxisome & ribosome Describe structure, functions and marker enzymes of mitochondria and Nucleus Illustrate the clinical conditions and congenital defects of cell organelles 	C2 C2 C3		
Cell membrane and transport across cell membrane				
Cell membrane	<ul style="list-style-type: none"> Explain composition of cell membrane Understand fluid mosaic model Describe functions performed by each component 	C2 C2 C2	LGIS	SAQ MCQ VIVA
Functions of cell membranes	<ul style="list-style-type: none"> Discuss functions & importance of cell membrane 	C2	LGIS	SAQ MCQ VIVA
Transport across cell membrane	<ul style="list-style-type: none"> Explain transport of various substances by active and passive transport, diffusion, phagocytosis, endocytosis and exocytosis Correlate the clinical disorders with defective transport across cell membrane 	C2 C3	LGIS	SAQ MCQ VIVA
Physicochemical properties of cell				
Osmosis, osmotic pressure and oncotic pressure	<ul style="list-style-type: none"> Define osmosis and osmotic pressure. Discuss biochemical application of osmotic and oncotic pressure and methods to measure them. Correlate oncotic pressure with clinical scenarios 	C1 C2 C3	LGIS	SAQ MCQ VIVA
Phenomenon of viscosity, surface tension.	<ul style="list-style-type: none"> Define phenomenon of viscosity, surface tension. Explain Biochemical applications and methods to measure them. 	C1 C2	LGIS	SAQ MCQ VIVA
Donnan equilibrium, adsorption and	<ul style="list-style-type: none"> Define Donnan equilibrium, adsorption and ion exchange resins. Describe their effects on tissue fluids and biochemical importance 	C1 C2	LGIS	SAQ MCQ VIVA

ion exchange resins				
Water and pH	<ul style="list-style-type: none"> Define pH, Pka, body buffer Discuss water distribution in the body Understand dehydration and overhydration 	C1 C2 C3	LGIS	SAQ MCQ VIVA
Enzymes				
Enzymes	<ul style="list-style-type: none"> Define Enzymes. Explain general functions of enzymes. Differentiate between coenzyme and cofactors 	C1 C2 C2	LGIS	M SAQ MCQ VIVA
Mechanism of enzyme action	<ul style="list-style-type: none"> Describe different mechanisms of enzyme action. 	C2	LGIS	SAQ MCQ VIVA
Classification of enzymes	<ul style="list-style-type: none"> Discuss different classes of Enzymes 	C2	LGIS	SAQ MCQ VIVA
Properties of Enzymes	<ul style="list-style-type: none"> Elaborate the Properties of Enzymes such as specificity for substrate and stereo specificity. 	C2	LGIS	SAQ MCQ VIVA
Factors affecting Enzyme action	<ul style="list-style-type: none"> Discuss different factors which increase or decrease the activity of enzymes 	C2	LGIS	SAQ MCQ VIVA
Enzyme inhibitors	<ul style="list-style-type: none"> Describe enzyme inhibitors and how the activity of the regulatory enzymes can be modulated for benefit of body 	C2	LGIS	SAQ MCQ VIVA
Marker enzymes	<ul style="list-style-type: none"> Interpret the role of measuring activity of different enzymes in the diagnosis and prognosis of different diseases 	C3	LGIS	SAQ MCQ VIVA
Enzyme as medicines	<ul style="list-style-type: none"> Interpret the role of Enzyme as medicine and their effects on body. 	C3	LGIS	SAQ MCQ VIVA
Nucleic acids.	<ul style="list-style-type: none"> Explain biochemical aspects of Nucleic acids State analogs of Nucleic acids 	C2	LGIS	SAQ MCQ VIVA
DNA	<ul style="list-style-type: none"> Explain structure and biological importance of DNA, types of DNA Differentiate between DNA &RNA 	C2 C2	LGIS	SAQ MCQ

				VIVA
RNA	<ul style="list-style-type: none"> Explain structure, types and functions of RNA 	C2	LGIS	SAQ MCQ VIVA
Replication	<ul style="list-style-type: none"> Describe mechanism of replication of prokaryotes & Eukaryotes 	C2	LGIS	SAQ MCQ VIVA
Transcription	<ul style="list-style-type: none"> Describe mechanism of Transcription of prokaryotes & Eukaryotes 	C2	LGIS	SAQ MCQ VIVA
Translation	<ul style="list-style-type: none"> Discuss genetic code Describe mechanism of Translation in prokaryotes & Eukaryotes Illustrate mechanism of action of antibiotics at different stages of translation 	C2 C2 C3	LGIS	SAQ MCQ VIVA
DNA damage & Repair	<ul style="list-style-type: none"> Describe mechanism of DNA damage & Repair Apply knowledge of DNA repair mechanisms in related clinical cases 	C2 C3	LGIS	SAQ MCQ VIVA
PCR	<ul style="list-style-type: none"> Define PCR Explain mechanism and indications of PCR 	C1 C2	LGIS	SAQ MCQ VIVA
Cancer	<ul style="list-style-type: none"> Explain biochemical basis of cancer 	C2	LGIS	SAQ MCQ VIVA

Anatomy Small Group Discussion (SGDs)

Demonstration/Dissection	At The End Of The Demonstration Student Should Be Able To	Learning Domains	Teaching Strategy	Assessment Tool
Anatomicomedical terminology I (anatomical position and planes)	<ul style="list-style-type: none"> Describe different anatomical planes of human body and correlate with radiological sections 	C2	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	<ul style="list-style-type: none"> Demonstrate anatomical position of human body 	P		
Anatomicomedical terminology(anatomical terms and axis of movements)-II	<ul style="list-style-type: none"> Define different terms related to body parts 	C1	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	<ul style="list-style-type: none"> Describe axis of movement 	C1		
	<ul style="list-style-type: none"> Demonstrate axis of movement 	P		
	<ul style="list-style-type: none"> Able to read a relevant research article 			
	<ul style="list-style-type: none"> Know to use digital library 	C3		
Anatomicomedical terminology -III(cell and tissues)	<ul style="list-style-type: none"> Define cell 	C1	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	<ul style="list-style-type: none"> Define tissue 	C1		
	<ul style="list-style-type: none"> Describe basic tissues of human body 	C2		
	<ul style="list-style-type: none"> Able to read a relevant research article 	C3		
	<ul style="list-style-type: none"> Know to use digital library 	C3		
Anatomicomedical terminology (skin and body systems)	<ul style="list-style-type: none"> Describe general organization of different systems of body 	C2	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	<ul style="list-style-type: none"> Discuss concepts of skin and fascia 	C1		
	<ul style="list-style-type: none"> Describe the classification of blood vessels 	C2		
	<ul style="list-style-type: none"> Describe the concepts of divisions of nervous system 	C1		
	<ul style="list-style-type: none"> Describe the formation of spinal nerve 	C2		
	<ul style="list-style-type: none"> Able to read a relevant research article 	C3		
	<ul style="list-style-type: none"> Know to use digital library 	C3		
Clavicle	<ul style="list-style-type: none"> Determine the side 	C2	Dissection Skill lab SGD	MCQ SAQ VIVA
	<ul style="list-style-type: none"> Demonstrate anatomical position, general features, attachments and articulations (medial and lateral). 	P		
	<ul style="list-style-type: none"> Describe Intramembranous development and cleido-cranial dysostosis. 	C3		

	<ul style="list-style-type: none"> Elaborate pectoral girdle formation movement and dislocation. 	C3		OSPE
	<ul style="list-style-type: none"> Describe ossification in detail and Fracture Of clavicle. 	C3		
	<ul style="list-style-type: none"> Know to use digital library 	C3		
	<ul style="list-style-type: none"> Able to read a relevant research article 	C3		
Scapula	<ul style="list-style-type: none"> Determine the side 	C2	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	<ul style="list-style-type: none"> Demonstrate anatomical position, general features, attachments, and articulation. (clavicle and shoulder joints) 	P		
	<ul style="list-style-type: none"> Describe scapular anastomosis and its clinical significance 	C3		
	<ul style="list-style-type: none"> Demonstrate Scapular movements. 	P		
	<ul style="list-style-type: none"> Able to read a relevant research article 	C3		
	<ul style="list-style-type: none"> Able to use digital library. 			
Humerus	<ul style="list-style-type: none"> Determine the side 	C2	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	<ul style="list-style-type: none"> Demonstrate anatomical position, general features, attachments and articulation (shoulder and elbow). 	P		
	<ul style="list-style-type: none"> Describe the importance of anatomical and surgical neck of humerus 	C1		
	<ul style="list-style-type: none"> Correlate axillary, radial, median and ulnar nerve damage with respect to various fractures of humerus. 	C2		
	<ul style="list-style-type: none"> Describe Significance of bicipital groove, angle of humeral torsion and carrying angle 	C1		
	<ul style="list-style-type: none"> Discuss Ossification and fractures 	C3		
	<ul style="list-style-type: none"> Able to read a relevant research article and use digital library 	C3		
Anterior axioappendicular region	<ul style="list-style-type: none"> Describe Superficial fascia with cutaneous nerve and vessels of anterior axioappendicular region and tabulate muscles of the anterior axioappendicular region 	C1	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	<ul style="list-style-type: none"> Understand the bio-physiological aspects of anterior axioappendicular region. 	C3		
	<ul style="list-style-type: none"> Able to read a relevant research article and use digital library 	C3		
Posterior axioappendicular muscles	<ul style="list-style-type: none"> Tabulate muscles of the pectoral region (origin, insertion, nerve supply, action and applied). 	C2	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	<ul style="list-style-type: none"> Identify and describe the pectoral and clavipectoral fascia. 	C2		
	<ul style="list-style-type: none"> Know to use digital library 	C3		
	<ul style="list-style-type: none"> Able to read a relevant research article 	C3		

Axilla	• Define axilla	C2	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	• Describe its boundaries,			
	• Enumerate the Contents of axilla, (axillary artery with its branches, axillary vein and tributaries, axillary lymphatics, lymph nodes and brachial plexus).	C2		
	• Describe the clinical significance of axillary lymph nodes	C3		
	• Able to read a relevant research article • Know to use digital library	C3		
Brachial plexus	• Describe the formation of brachial plexus its roots and trunks.	C1	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	• Describe the origin and root value of different nerves arising	C2		
	• Able to read a research article on brachial plexus	C3		
	• Able to use digital library	C3		
Brachial plexus injuries	• Describe the different neurological deficits arising as a result of damaged to roots, trunks and branches of brachial plexus at different levels.	C3	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	• Describe the origin and root value of different nerves arising	C3		
	• Able to read a research article on brachial plexus	C3		
	• Know to use digital library			
Breast	• Describe the extent of breast	C1	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	• Describe the relations of breast	C2		
	• Describe structure of gland.	C1		
	• Discuss the blood supply, venous drainage and lymphatics.	C1		
	• Correlate Clinical picture and lymphatic spread in breast carcinoma.	C3		
	• Discuss congenital anomalies of breast	C3		
	• Able to read a relevant research article • Know to use digital library	C3		
Sternoclavicular and acromioclavicular joints	• Classify joints and discuss the attachment of capsule and ligaments and discuss the different movement on these joints alongwith muscles involved in these movements.	C2	Dissection Skill lab SGD	MCQ SAQ VIVA OSPE
	• Describe neurovascular supply.	C2		
	• Able to read a relevant research article	C3		
	• Know to use digital library	C3		
	• Know to use digital library	C3		
Radiographs/surface anatomy of axioappendicular region	• Discuss the surface anatomy of axioappendicular region.	C2	Dissection Skill lab SGD	MCQ VIVA OSPE
	• Able to interpret the normal radiologic appearance of bones and viscera in axioappendicular region.	C3		

Physiology Small Group Discussion (SGDs)

Topic	Learning Objectives	Learning Domain	Teaching Strategy	Assessment Tools
Cell and homeostasis	Understand functional organization of human body	C2	SGD	MCQ SAQ VIVA
	Discuss homeostasis/control systems of the body	C2		
Cell cytoskeleton and locomotion and cell functions	Discuss the functions of cell	C2	SGD	MCQ SAQ VIVA
	Describe cell cytoskelation	C1		
Transport across cell membrane	Describe the structure of cell membrane	C1	SGD	MCQ SAQ VIVA
	Enlist various ion channels	C1		
	Discuss transport mechanism across the cell membrane with special emphasis on diffusion and osmosis	C2		
	Explain the types of active transport	C2		
Intracellular communication and cell junction, signal transduction	Describe the structure and function of various intracellular connections	C1	SGD	MCQ SAQ VIVA
	Discuss second messenger system	C2		

Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives	Learning Domain	Teaching Strategy	Assessment Tools
Cell and Cell Membrane	Explain Composition of Normal Cell & Cell Organelles	C2	SGD	MCQ SAQ VIVA
	Describe Composition of Cell Membrane	C2		
	Understand Fluid Mosaic Model			
Physicochemical Aspects of Cell	Define osmosis and osmotic pressure.	C1	SGD	MCQ SAQ VIVA
	Discuss biochemical application of osmotic and oncotic pressure and methods to measure them.	C2		
	Correlate oncotic pressure with clinical scenarios	C3		
	Define phenomenon of viscosity, surface tension.	C1	SGD	MCQ SAQ VIVA
	Explain Biochemical applications and methods to measure them.	C2		
Define Donnan equilibrium, adsorption and ion exchange resins. Describe their effects on tissue fluids and biochemical importance	C1 C2	SGD	MCQ SAQ VIVA	

Anatomy Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning Resources
Clavicle	<ul style="list-style-type: none"> • Determine the side • Demonstrate anatomical position, general features, attachments and articulations (medial and lateral). • Describe Intramembranous development. • Describe ossification in detail and Fracture of Clavicle • Able to read a relevant research article 	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. Clavicle (Chapter 3, Page143,153,154).
Scapula	<ul style="list-style-type: none"> • Determine the side • Demonstrate anatomical position, general features, attachments and articulations (medial and lateral). • Describe scapular anastomosis and its clinical significance • Able to read a relevant research article 	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. Scapula (Chapter 3, Page143-145,154,171,172).
Anterior axioappendicular muscles	<ul style="list-style-type: none"> • Describe Superficial fascia with cutaneous nerve and vessels of anterior axioappendicular region. • Understand the bio-physiological aspects of anterior axioappendicular region. • Able to read a relevant research article and use digital library 	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. Anterior axioappendicular muscles (Chapter 3, Page 168,169).
Posterior axioappendicular muscles	<ul style="list-style-type: none"> • Tabulate Muscles of the pectoral region (origin, insertion, nerve supply, action and applied). • Identify and describe the pectoral and clavipectoral fascia. • Able to read a relevant research article and use digital library 	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. Posterior axioappendicular muscles (Chapter 3, Page 170,171).
Axilla	<ul style="list-style-type: none"> • Define axilla • Describe its boundaries, • Enumerate the Contents of axilla, (axillary artery with its branches, axillary vein and tributaries, axillary lymphatics, lymph nodes and brachial plexus). 	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. Axilla (Chapter 3, Page 183-190,197,198).
Brachial plexus	<ul style="list-style-type: none"> • Describe the formation of brachial plexus its roots and trunks. • Describe the origin and root values of different nerves arising • Able to read a research article on brachial plexus • Able to use digital library 	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. Brachial plexus (Chapter 3, Page 191-196).
Brachial plexus injuries	<ul style="list-style-type: none"> • Describe the different neurological deficits arising as a result of damaged to roots, trunks and branches of brachial plexus at different levels. • Able to read a research article on brachial plexus 	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. Brachial plexus injuries (Chapter 3, Page 199-200).
Breast	<ul style="list-style-type: none"> • Describe the extent of breast • Describe the relations of breast • Describe structure of gland. • Discuss related clinical 	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. Breast (Chapter 4, Page 315-318,323-326).

Physiology Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning Resources
Concept of body fluids & internal environment.	<ul style="list-style-type: none"> • Introduction • Concept of extracellular and intracellular fluid • Homeostasis • Examples of control system 	<ul style="list-style-type: none"> ❖ Ganong's Review of Medical Physiology.25THEdition, General principles and Energy production in Medical Physiology (chapter 01, Page 03) ❖ Human Physiology by Dee Unglaub Silver thorn. 8THEdition. Introduction to physiology, control systems and homeostasis, chapter no. 1, page no. 40.49 ❖ Physiology by Linda S. Costanzo 6th Edition. Cellular physiology, chapter 01. Page 1 ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Introduction to Physiology.(Section 01, Chapter1, page 03).
Cell membrane & classification of cell organelles	<ul style="list-style-type: none"> • Structure of cell membrane • Cell cytoskeleton • Cytoplasm and various organelles • Golgi Apparatus and its function • Lysosomes and peroxisomes • Secretory vesicles 	<ul style="list-style-type: none"> ❖ Ganong's Review of Medical Physiology.25THEditions, Overview of Cellular Physiology in Medical Physiology (chapter 02, Page33) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Compartmentation, chapter 3, page95 ❖ Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. The cell (chapter 01,section 1 Page 03, 18) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Introduction to Physiology.(Section 1, chapter 03, page 31)
Intracellular communication and cell junction	<ul style="list-style-type: none"> • Receptors and its types • Cellular signaling and various mechanisms • Signal transduction • Hormone receptors and their activation • Second messenger mechanisms 	<ul style="list-style-type: none"> ❖ Ganong's Review of Medical Physiology.25THEdition., Overview of Cellular Physiology in Medical Physiology (chapter 02, Page 33-44) ❖ Human Physiology by Dee Unglaub Silver thorn. 8THEdition. Compartmentation, chapter 3, page109 ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition The cell (chapter 01, Page14) ❖ Textbook of Medical Physiology by Guyton & Hall.14thEdition. Introduction to Endocrinology.(Section 14, Page 920)

<p>Receptors and signal transduction</p>	<ul style="list-style-type: none"> • Receptors and its types • Cellular signaling and various mechanisms • Signal transduction • Hormone receptors and their activation • Second messenger mechanisms 	<ul style="list-style-type: none"> ❖ Ganong's Review of Medical Physiology.25THEditions, Overview of Cellular Physiology inMedical Physiology (Chapter 02, Page 41) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Communication, chapter 6, page204 ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 7, principles ofhormone action and endocrine control (Chapter 50, Page817) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Introduction to Physiology.(Section 1, Chapter 02, page 13)
<p>Homeostasis Control System- I (Negative Feedback System, Conceptof Error and Gain)</p>	<ul style="list-style-type: none"> • Control systems of body • Negative and positive feedback mechanism and their examples • Apoptosis and necrosis 	<ul style="list-style-type: none"> ❖ Ganong's Review of Medical Physiology.25THEdition, Overview of Cellular Physiology inMedical Physiology (Chapter 02, Page 62) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Introduction to physiology, chapterno. 1, page no. 45 ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Introduction to Physiology.(Section 1, Chapter 1, page 04,07) (Chapter 03, Page 45)
<p>Genetics, Transcriptionand Translation</p>	<ul style="list-style-type: none"> • Building blocks of DNA • Genetic code • Process of transcription and translation • Types of RNA • Cell division 	<ul style="list-style-type: none"> ❖ Ganong's Review of Medical Physiology.25THEdition, General principles and Energy productionin MedicalPhysiology (Chapter 01, Page 63) ❖ Textbook of Medical Physiology by Guyton & Hall.14thEdition. (Section 01, Chapter03, Page31)
<p>Structure of Nucleus, Ribosomes andCell Division</p>	<ul style="list-style-type: none"> • Structure of Nucleus • Ribosomes • Mitosis & Overview of cancer 	<ul style="list-style-type: none"> ❖ Ganong's Review of Medical Physiology.25THEdition, Overview of Cellular Physiology inMedical Physiology (Chapter 02, Page42) ❖ Human Physiology by Dee Unglaub Silver thorn. 8THEdition. Compartmentation, chapter 3, page100 ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. the cell (Chapter 01,Page7,) ❖ Textbook of Medical Physiology by Guyton & Hall.14thEdition. (Section 01, Chapter02, Page 19)

<p>Transport across cell membrane and its various types (osmosis, diffusion, primary and secondary active transport)</p>	<ul style="list-style-type: none"> • Types of transport across cell membrane • Diffusion and osmosis • Concept of gating of channels • Primary active transport • Secondary active transport 	<ul style="list-style-type: none"> ❖ Ganong's Review of Medical Physiology. 25TH Edition, Overview of Cellular Physiology in Medical Physiology (Chapter 02, Page 45) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Membrane dynamics chapter 5, page 160 ❖ Physiology by Linda S. Costanzo 6th Edition. Cellular physiology, chapter 1, page 5 ❖ Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Properties and functions of cell membrane, chapter 2, page 18 ❖ Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Membrane Physiology. (Section 02, Chapter 04, Page 51)
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Biochemistry Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning resources
<p>Cell and cell organelles</p>	<ul style="list-style-type: none"> • Explain composition of normal cell • Describe methods to separate different organelles of cell • Describe structure, functions and marker enzymes of ER & Golgi apparatus • Describe structure, functions and marker enzymes of lysosome, peroxisome & ribosome • Describe structure, functions and marker enzymes of mitochondria and Nucleus • Illustrate the clinical conditions and congenital defects of cell organelles 	<ul style="list-style-type: none"> ❖ Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9th edition (chapter 1, page 3)
<p>Cell membrane</p>	<ul style="list-style-type: none"> • Explain composition of cell membrane • Understand fluid mosaic model • Describe functions performed by each component 	<ul style="list-style-type: none"> ❖ Harper's illustrated biochemistry 32nd edition (chapter 40 page - 460)
<p>Transport across cell membrane</p>	<ul style="list-style-type: none"> • Explain transport of various substances by active and passive transport, diffusion, phagocytosis, endocytosis and exocytosis • Correlate the clinical disorders with defective transport across cell membrane 	<ul style="list-style-type: none"> ○ ❖ Harper's illustrated biochemistry 32nd edition (Chapter 40 page 467)

Osmosis, osmotic pressure and oncotic pressure	<ul style="list-style-type: none"> Define osmosis and osmotic pressure. Discuss biochemical application of osmotic and oncotic pressure and methods to measure them. Correlate oncotic pressure with clinical scenarios 	❖ Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9 th edition (Chapter 02 page 46)
Phenomenon of viscosity, surface tension.	<ul style="list-style-type: none"> Define phenomenon of viscosity, surface tension. Explain Biochemical applications and methods to measure them. 	❖ Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9 th edition (Chapter 02 page 52, 55)
Donnan equilibrium, adsorption and ion exchange resins	<ul style="list-style-type: none"> Define Donnan equilibrium, adsorption and ion exchange resins. Describe their effects on tissue fluids and biochemical importance 	○ ❖ Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9 th edition (Chapter 02 page 50)
Marker enzymes	<ul style="list-style-type: none"> Interpret the role of measuring activity of different enzymes in the diagnosis and prognosis of different diseases 	❖ Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9 th edition (Chapter 6 page 168)
Enzyme as medicines	<ul style="list-style-type: none"> Interpret the role of Enzyme as medicine and their effects on body. 	❖ Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9 th edition (Chapter 06 page 169) ❖ Lippincott Illustrated reviews of biochemistry 8 th edition (Chapter 05 page 69)
Nucleic acids.	<ul style="list-style-type: none"> Explain biochemical aspects of Nucleic acids State analogs of Nucleic acids 	❖ Lippincott Illustrated reviews of biochemistry 8 th edition (Chapter 30 page 459)
DNA	<ul style="list-style-type: none"> Explain structure and biological importance of DNA, types of DNA Differentiate between DNA & RNA 	❖ Lippincott Illustrated reviews of biochemistry 8 th edition (Chapter 30 page 460)
RNA	<ul style="list-style-type: none"> Explain structure, types and functions of RNA 	❖ Lippincott Illustrated reviews of biochemistry 8 th edition (Chapter 31 page 482)
Transcription	<ul style="list-style-type: none"> Describe mechanism of Transcription of prokaryotes & Eukaryotes 	❖ Lippincott Illustrated reviews of biochemistry 8 th edition (Chapter 31 page 484)
Cancer	<ul style="list-style-type: none"> Explain biochemical basis of cancer 	❖ Harper's illustrated biochemistry 32 nd edition (Chapter 56 page 681)

Histology Practicals Skill Laboratory (SKL)

Practical	At The End Of The Practical Student Should Be Able To	Learning Domains	Teaching Strategy	Assessment Tool
Introduction to Microscope	• Identify different types of microscopes.	C1	Skill lab Demo	OSPE
	• Describe functions of different parts of microscope.	C1		
	• Identify different types of lenses.	C1		
	• Focus slides.	P		
Simple epithelium	• Classify epithelium.	C2	Skill lab Demo	OSPE
	• Illustrate different types of simple epithelium	P		
	• Identify types of simple epithelium.	P		
	• Write two points of identification	C1		
Stratified epithelium /Transional Epithelium	• Classify stratified epithelium.	C1	Skill lab Demonstration	OSPE
	• Illustrate different types of stratified epithelium	C1		
	• Discuss functions of stratified epithelium	C2		
	• Enlist sites of specific type of epithelium	C2		
	• Identify type of stratified epithelium under microscope	C1		
	• Write two points of identification	P		
Mammary gland	• Illustrate the different stages of activity of mammary gland	C2	Skill lab Demonstration	OSPE
	• Identify the slides of different stages of mammary gland	P		

Physiology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to Microscope	• Identification of different parts especially focusing lenses and their uses	C1	Skill Lab	OSPE
	• Focusing technique of different blood slides e.g Neubauer's chamber TLC & DLC slides	P		
Introduction to Wintrobe & Westergen tube	• Identify the wintrobe and westergen tubes	C1	Skill Lab	OSPE
	• Should know the differences between two tubes and uses in different methods	P		
Apparatus identification	• Complete study of Neubauer's slide, calculation of volumes of corner squares and central squares	P	Skill Lab	OSPE

(Introduction to Neubauer's chamber, Red Blood Cell (RBC) pipettes & White Blood Cell (WBC) pipette)	• Important differentiating points between WBC & RBC's pipettes	C1		
	• How to dilute the two pipettes	P		
	• Should know the composition of diluting fluids	C1		
Apparatus identification (Introduction to centrifuge machine)	• Be aware with the electrical connections of centrifuge machine and to control different speeds	P,A	Skill Lab	OSPE

Biochemistry Practicals Skill Laboratory (SKL)

Topic	At the end of practical students should be able to	Learning domain	Teaching strategy	Assessment Tool
Introduction	• Describe laboratory techniques	C1	Skill Lab	OSPE
	• State precautions while working in the laboratory	C1		
Introduction to glassware	• Describe Pipetting and familiarity with glassware used in the laboratory	C1	Skill Lab	OSPE
Physic chemical principals; Adsorption, Surface Tension & Emulsion	• Illustrate process of adsorption and adsorbents	P	Skill Lab	OSPE
	• Demonstrate mechanism of surface tension and surfactants	P		
	• Demonstrate mechanism of emulsion	P		
Physic chemical principals; tonicity	• Demonstrate effects of solutions of different tonicity on red cells (isotonic, hypotonic and hypertonic)	P	Skill Lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**
- **Longitudinal Themes**
 - **Biomedical Ethics & Professionalism**
 - **Family Medicine**
 - **Artificial Intelligence (Innovation)**
 - **Integrated Undergraduate Research Curriculum (IUGRC)**

Basic and Clinical Sciences (Vertical Integration)

Case Based Learning (CBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
Anatomy	<ul style="list-style-type: none"> Fracture of clavicle 	Apply basic knowledge of subject to study clinical case.	C3
	<ul style="list-style-type: none"> Winging of scapula due to long thoracic nerve injury 	Apply basic knowledge of subject to study clinical case.	C3
Physiology	<ul style="list-style-type: none"> Down's syndrome 	Apply basic knowledge of subject to study clinical case.	C3
	<ul style="list-style-type: none"> Smoker's cough 	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	<ul style="list-style-type: none"> Enzymes 	Apply basic knowledge of subject to study clinical case.	C3
	<ul style="list-style-type: none"> Genetics/PCR 	Apply basic knowledge of subject to study clinical case.	C3

Large Group Interactive Sessions (LGIS)

Pathology

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tools
Introduction to Pathology	<ul style="list-style-type: none"> Define the following terms: Etiology Pathogenesis Morphology 	C1	LGIS SGD	MCQ
Cellular Responses to Injury	<ul style="list-style-type: none"> Discuss cellular responses to injury for: Reversible injury Adaptation Irreversible injury Cell death 	C2	LGIS SGD	MCQ
	<ul style="list-style-type: none"> Describe, the morphologic changes in cell injury culminating in necrosis and apoptosis 	C2		
Intracellular Accumulations	<ul style="list-style-type: none"> Describe types of intracellular accumulations with clinical examples: Lipids/ fat 	C2	LGIS SGD	MCQ

	<ul style="list-style-type: none"> • Protein • Glycogen • Pigments 			
	<ul style="list-style-type: none"> • Explain mechanism of intracellular accumulations. 	C2		
	<ul style="list-style-type: none"> • Enlist causes of fatty change 	C1		
	<ul style="list-style-type: none"> • Describe the pathogenesis of fatty liver 	C1		
Pigments	<ul style="list-style-type: none"> • Classify pigments 	C2	LGIS SGD	MCQ
	<ul style="list-style-type: none"> • Explain the mechanism of pigment production and deposition in various clinical settings 	C2		
	<ul style="list-style-type: none"> • Describe the morphological features (gross/ microscopic) with deposition of following pigments: Lipofuscin, Melani, Hemosiderin, Bilirubin, Anthracosis 	C1		
Free Radicals/ Reactive Oxygen Species (Ros). Oxidative Stress	1. Define ROS/free radicals	C1	LGIS SGD	MCQ
	2. Enlist oxygen derived free radicals	C1		
	3. Describe mechanism of generation of free radicals	C2		
	4. Describe mechanism of removal of free radicals(antioxidants)	C2		
	5. Describe the pathologic effects of free radicals	C2		
Irreversible Injury. Necrosis	<ul style="list-style-type: none"> • Define necrosis 	C1	LGIS SGD	MCQ
	<ul style="list-style-type: none"> • Enlist patterns/types with clinical examples 	C1		
	<ul style="list-style-type: none"> • Describe morphological changes (gross and microscopic) in necrosis 	C2		
Apoptosis (Irreversible Injury)	<ul style="list-style-type: none"> • Define apoptosis 	C1	LGIS SGD	MCQ
	<ul style="list-style-type: none"> • Enlist clinical examples of apoptosis in • physiologic conditions 	C1		
	<ul style="list-style-type: none"> • Enlist clinical examples of apoptosis in pathologic conditions 	C1		
	<ul style="list-style-type: none"> • Describe mechanism of apoptosis 	C2		
	<ul style="list-style-type: none"> • Tabulate differences between necrosis and apoptosis 	C1		
Genetic Disorders	<ul style="list-style-type: none"> • Classify human genetic disorders 	C1	LGIS SGD PBL	MCQ
	<ul style="list-style-type: none"> • Define mutation 	C1		
	Define the following inheritance pattern: <ul style="list-style-type: none"> • Autosomal dominant • Autosomal recessive • X-linked 	C1		
	<ul style="list-style-type: none"> • Describe diseases associated with consanguineous marriages 	C2		

Pharmacology

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to Pharmacology	• Define pharmacology	C1	LGIS	MCQ
	• Discuss main branches of Pharmacology	C2		
	• Define drug according to WHO	C1		
	• Describe drug nomenclature	C1		
	• Cite important drug references	C1		
	• Describe the sources of drug	C2		
Routes of drug administration	• Enlist different routes of drug administration	C1	LGIS	MCQ
	• Discuss the merits and demerits of each route of drug administration	C2		
	• Identify the factors the influence the choice of the route of drug administration	C2		
Absorption of drugs	• Define drug absorption	C1	LGIS	MCQ
	• Identify different sites of drug absorption	C1		
	• Recall transport processes utilized by the drug for absorption across different sites	C1		
	•			
Factors affecting absorption of drugs	• Enlist drug and body related factors affecting drug absorption	C1	LGIS	MCQ
	• Briefly discuss different factors affecting drug absorption	C2		
Distribution of drugs	• Define distribution of drug	C1	LGIS	MCQ
	• Identify different body compartments	C1		
	• Explain distribution of drug through various body compartments	C2		
	• Enlist factors affecting distribution of drugs	C1		

Community Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Health for All	• Describe Man and medicine towards health for all	C1	LGIS	MCQS
	• Explain different eras of medicine	C1		
	• Describe different systems of medicine	C1		
Genetics	• Discuss Population Genetics	C1	LGIS PBL	MCQS

Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Medicine Evidence based medicine	• Define evidence based Medicine	C1	LGIS	MCQs
	• Discuss its applications.	C2		
	• Discuss components of EBM.	C2		
Bedside teaching	• Explain how to take history of the patient and which steps to follow	C2	LGIS	MCQs
General physical examination	• Explain How to perform GPE	C2	LGIS	MCQs
	• Discuss the importance of various signs	C2		
	• Discuss its correlation with systemic examination	C2		

Surgery

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
History taking & its importance	• Enlist the components of a detail history	C1	LGIS	MCQs
	• Describe Importance of each component	C2		
Breast surgery	• Describe the extension of breast	C1	LGIS	MCQs
	• Discuss different condition requiring breast surgery	C1		
	• Enlist steps involved in breast surgery	C1		
	• Describe outcomes of breast surgery	C1		

Obstetrics & Gynaecology

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to Fertilization, Implantation, embryogenesis, congenital abnormalities	<ul style="list-style-type: none"> Understand the process of conception and implantation. 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> Know the importance of embryogenesis 	C2		
	<ul style="list-style-type: none"> Identify major structural abnormalities 	C1	LGIS	MCQs
	<ul style="list-style-type: none"> Understand the factors involved in fetal structural abnormalities 	C2		

Padiatrics

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Medical Genetics & Dysmorphology	Describe the chromosomal abnormality and clinical features of trisomy 21	C2	LGIS	MCQs

Medical Education

Topic	Learning Objectives At the end of the lecture the student should be able to	Teaching Strategy	Assessment Tool
Orientation of Integrated Modular system	<ul style="list-style-type: none"> Understand the concept of integration Understand the orientation of integrated modular curriculum of RMU Discuss the concept of internal assessment To comprehend the rules of eligibility of professional examination 	LGIS	MCQs
Leadership, mission & vision	<ul style="list-style-type: none"> Define clinical leadership Differentiate between management and leadership Types of leadership style Discuss the mission and vision RMU Define mission vision and strategies 	LGIS	MCQs

Professionalism	<ul style="list-style-type: none"> • Define medical professionalism • Describe attributes of healer and professional • Discuss the social contract of medical profession • List values, skills and behavior for professionalism 	LGIS	MCQs
Lecture on feedback	<ul style="list-style-type: none"> • Receive and provide effective feedback • Describe types of feedback • Discuss principles of feedback • Discuss essential elements of feedback 	LGIS	MCQs
Islam and Medical Science	<ul style="list-style-type: none"> • Discuss role of Islam and importance of Islam in Medical Science 	LGIS	MCQs

Behavioral Sciences

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Introduction To Behavioral Sciences	<ul style="list-style-type: none"> • To describe Holistic and Traditional Allopathic medicine. 	C1	LGIS	MCQs
Management of stress	<ul style="list-style-type: none"> • Define the types of stress, its causes and management of stress 	C1		

Biomedical Ethics & Professionalism

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to History of Medical Ethics	<ul style="list-style-type: none"> • To appraise the historical perspective of Hippocratic oath • Understanding the beginnings of contemporary bioethics to address ethical dilemmas 	C2 C2	LGIS	MCQs

Family Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to Family Medicine & its application in health care system	<ul style="list-style-type: none"> • Describe presenting complains of patients with body aches 	C3	LGIS-1	MCQs
	<ul style="list-style-type: none"> • Disscus complications of body aches 			
	<ul style="list-style-type: none"> • Descirbe intial treatment of patients with body aches 			
	<ul style="list-style-type: none"> • Know when to refer patient to consultant/ Hospital 			

Artificial Intelligence (Innovation)

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to Artificial Intelligence	<ul style="list-style-type: none"> • Discuss fractures of upper limb with their clinical significance. • Discuss role of artificial intelligence in interpretation of radiographs 	C2	LGIS	MCQS

Integrated Undergraduate Research Curriculum (IUGRC)

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Theoretical Lecture Based Teachings				
Introduction to Community Medicine	Define Community Medicine, public health, preventive medicine	C1		
	Differentiate Community medicine and preventive medicine	C2		
	Elaborate evolution of preventive medicine/public health	C2		
	Discuss role of public health in prevention of diseases	C2		
	Discuss importance of public health	C2		
Introduction to Health Research process and researcher (Research-I)	<ul style="list-style-type: none"> • Define Health Research & Concept of Health research methods. 	C1	LGIS-1	MCQs
	<ul style="list-style-type: none"> • Understand background and value of research in health & human development 	C2		
	<ul style="list-style-type: none"> • Elaborate Fundamental types and fields of health research covering; <ul style="list-style-type: none"> - Basic & Applied Research - Quantitative & Qualitative Research - Collaborative & Multidisciplinary research - Health Research triangle 	C2		
	<ul style="list-style-type: none"> • Conceptualize the drivers of research Including; <ul style="list-style-type: none"> - Curiosity - Health needs - Opportunity Profit 	C2		
	<ul style="list-style-type: none"> • Describe meanings of HR & HRM 			
	<ul style="list-style-type: none"> • Appreciate role of HR in healthcare practices and human development 	C2		
	<ul style="list-style-type: none"> • Differentiate among various types and fields of HR 	C2		
	<ul style="list-style-type: none"> • Explain different drivers of HR 	C2		
	<ul style="list-style-type: none"> • Explain meanings of various characteristics of health research process so as to 	C2		
Characteristics of research and health research methods (Research-II)	<ul style="list-style-type: none"> • Differentiate research activity from non-research activity. 	C2	LGIS-2	MCQs
	<ul style="list-style-type: none"> • Elaborate ingredients of researcher 	C2		
	<ul style="list-style-type: none"> • Appreciate the importance of commands in certain pre-requisite subjects & skills before undertaking a research study. 	C2		
	<ul style="list-style-type: none"> • Define Health Research 	C1		
	<ul style="list-style-type: none"> • Discuss the criteria for selection of a research topic 	C2		

	<ul style="list-style-type: none"> • Elaborate the types of variable 	C2		
	<ul style="list-style-type: none"> • Differentiate between qualitative and quantitative data 	C2		
Basics of Ethics in Health Research (Research-III)	<ul style="list-style-type: none"> • Appreciate value of ethics in conduct of Health Research. 	C2	LGIS-3	MCQs
	<ul style="list-style-type: none"> • Explain basic ethical principles of health research. 	C2		
	<ul style="list-style-type: none"> • Interpret the application of data collection ethics 	C2		
	<ul style="list-style-type: none"> • Explain ethics of research methods 	C2		
Basics of Ethics in Health Research (Research-IV)	<ul style="list-style-type: none"> • Narrate responsibility for ethics in HR. 	C2		
	<ul style="list-style-type: none"> • Explain Nuremburg code and importance of ethics in current research trends. 	C2		
	<ul style="list-style-type: none"> • Elaborate General ethical principles including explanation of 04 basic principles of Beneficence, non-maleficence, respect and justice 	C2		
Five steps of EBM	<ul style="list-style-type: none"> • Discuss Five steps of EBM 	C2	LGIS-3	MCQs

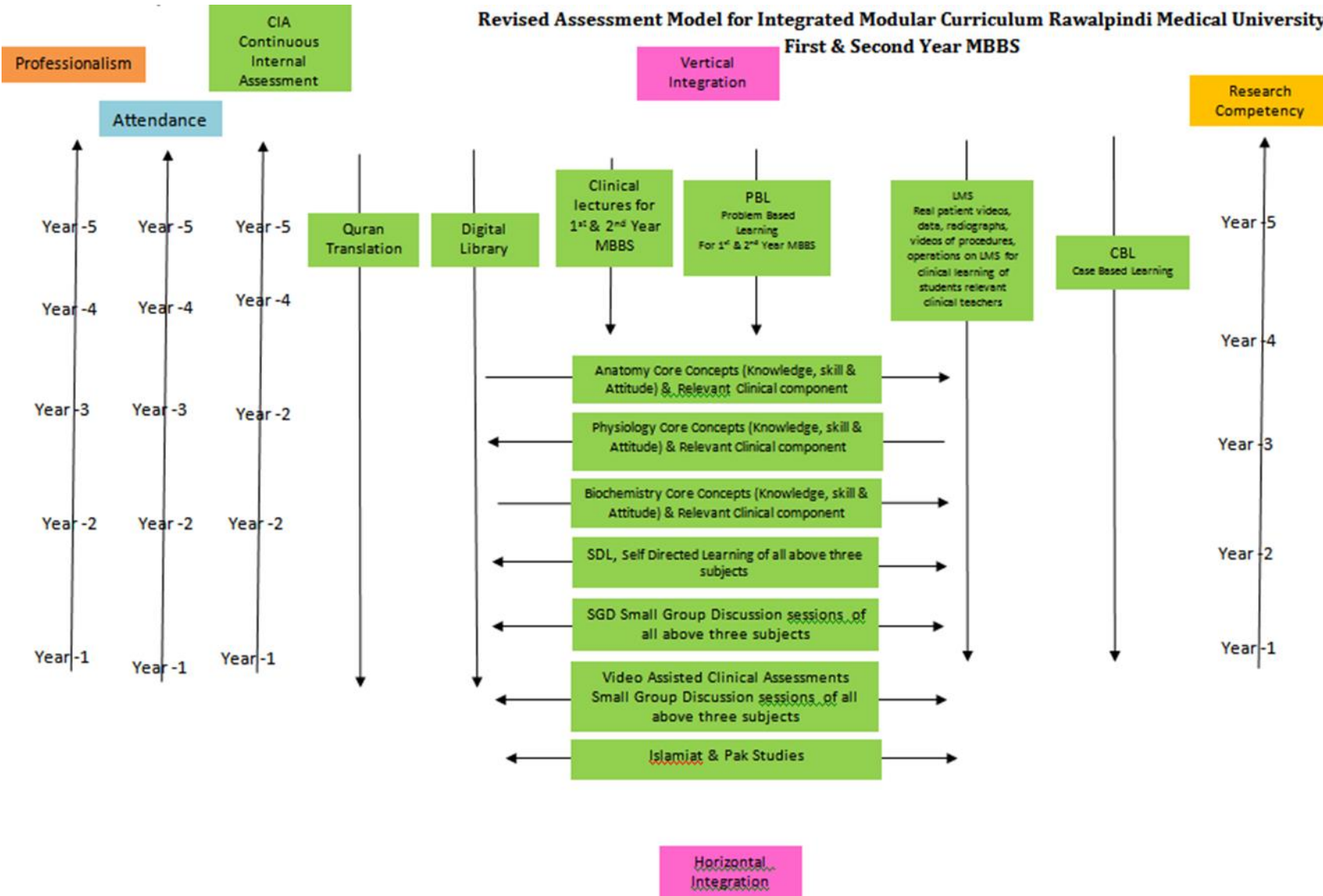
SECTION - IV

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in Foundation Module**

Revised Assessment Model for Integrated Modular Curriculum Rawalpindi Medical University First & Second Year MBBS



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 - 74%	*75 - 80%	81 - 100%

90% is eligibitly criteria for appearing in professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular, modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3 rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given the share according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based), modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time In Foundation Module I

Block	Sr #	Module – 1 Foundation Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures	Formative	15 Minutes				
	7	Assessment of Bioethics Lectures	Summative	2 Minutes				
	8	Assessment of IUGRC Lectures	Summative	10 Minutes				

Learning Resources

Subject	Resources
Anatomy	<p>A. Gross Anatomy</p> <ol style="list-style-type: none"> 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S.Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III <p>B. Histology</p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. <p>C. Embryology</p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	<p>A. Textbooks</p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. <p>B. Reference Books</p> <ol style="list-style-type: none"> 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Harper's Illustrated Biochemistry 32th edition. 2. Lehninger Principle of Biochemistry 8th edition. 3. Biochemistry by Devlin 7th edition.
Community Medicine	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
Pharmacology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Lippincot Illustrated Pharmacology 9th edition.

SECTION - V

Time Table

Integrated Spiral Clinically Oriented Modular Curriculum for First Year MBBS

Foundation Module Time Table

First Year MBBS

Session 2022 - 2023

Batch- 50

Foundation Module Team

Module Name	:	Foundation Module
Duration of module	:	06 Weeks
Coordinator	:	Dr. Mohtasham Hina
Co-coordinator	:	Dr. Zeneera Saqib
Reviewed by	:	Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Mohtasham Hina (Associate Professor of Anatomy)
2.	Director DME	Prof. Dr. Rai Muhammad Asghar	2.	DME Focal Person	Dr. Sidra Hamid
3.	Convener Curriculum	Prof. Dr. Naeem Akhter	3.	Co-coordinator	Dr. Zeneera Saqib (Demonstrator of Anatomy)
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf	4.	Co-Coordinator	Dr. Uzma kiayani (Senior Demonstrator of Physiology)
5.	Additional Director DME	Prof. Dr. Ifra Saeed	5.	Co-coordinator	Dr. Shahrukh Khan (Senior Demonstrator of Biochemistry)
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar			
7.	Chairperson Biochemistry	Dr. Aneela Jamil	DME Implementation Team		
8.	Focal Person Anatomy First Year MBBS	Prof Dr. Ayesha Yousaf	1.	Director DME	Prof. Dr. Rai Muhammad Asghar
9.	Focal Person Physiology	Dr. Sidra Hamid	2.	Implementation Incharge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
10.	Focal Person Biochemistry	Dr. Aneela Jamil	3.	Deputy Director DME	Dr Shazia Zaib
11.	Focal Person Pharmacology	Dr. Zunera Hakim	4.	Module planner & Implementation coordinator	Dr. Sidra Hamid
12.	Focal Person Pathology	Dr. Asiya Niazi	5.	Editor	Muhammad Arslan Aslam
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir			
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom			
15.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar			
16.	Focal Person Family Medicine	Dr. Sadia Khan			

Discipline wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
1	Anatomy	Introduction To General Anatomy	General Embryology <ul style="list-style-type: none"> • Introduction To Human Development • Oogenesis • Spermatogenesis • Female Reproductive Cycles • Ovulation And Fertilization • Cleavage And Blastocyst Formation • Development Of Mammary Gland 	General Histology <ul style="list-style-type: none"> • Types Of Epithelium • Specialization Of Apical Cell Surface • Intercellular Junctions and Adhesions • Glandular Epithelium • Histology Of Mammary Gland 	<ul style="list-style-type: none"> • Anatomicomedical Terminologies I • Anatomicomedical Terminologies II (Anatomical Terms And Axis Of Movements) • Anatomicomedical Terminologies III (Cell and Tissues) • Anatomicomedical Terminologies IV (Skin & Body System) • Clavicle • Scapula • Humerus • Anterior Axioappendicular Muscles • Posterior Axioappendicular Muscles • Axilla • Brachial Plexus • Brachial Plexus Injuries • Breast • Sternoclavicular And Acromioclavicular Joints • Radiograph And Surface Anatomy of Axioappendicular Region
	<ul style="list-style-type: none"> • Biochemistry 	<ul style="list-style-type: none"> • Cell And Cell Organelles, Cell Membrane and Transport Across Cell Membrane, Physicochemical Properties, Enzymes, Cancer, Nucleic Acid Chemistry, Genetics 			
	<ul style="list-style-type: none"> • Physiology 	<ul style="list-style-type: none"> • Functional Organization of The Human Body and Control of the “Internal Environment • The Cell and Its Functions • Genetic Control of Protein Synthesis, Cell Function, And Cell Reproduction • Transport Of Substances Through the Cell Membrane 			
	<ul style="list-style-type: none"> • Vertical components 	<ul style="list-style-type: none"> • The Holy Quran Translation Component 			
	<ul style="list-style-type: none"> • Bioethics & Professionalism 	<ul style="list-style-type: none"> • Introduction to history of medical ethics 			
	<ul style="list-style-type: none"> • Artificial Intelligence 	<ul style="list-style-type: none"> • Introduction to Artificial Intelligence 			

	Innovation	
	<ul style="list-style-type: none"> • Family Medicine 	<ul style="list-style-type: none"> • Introduction to Family Medicine & its application in health care system
	<ul style="list-style-type: none"> • Research (IUGRC) 	<ul style="list-style-type: none"> • Research I Introduction of health research process • Research II characteristic of reserch process • Research III Basis of ethics in health research • Research IV Five Steps of EBM
	<ul style="list-style-type: none"> • Behavioral Sciences 	<ul style="list-style-type: none"> • Introduction to Behavioral Sciences • Management of stress
	<ul style="list-style-type: none"> • Vertical Integration 	<p>Clinically content relevant to Foundation module</p> <ul style="list-style-type: none"> • Opening ceremony (DME) • Introduction To Different Teaching Strategies, Role Of Team Leader Facilitator And Students SGD/LGIS/TBL/PAL/INTERNET & Literature Group activity (DME) • Leadership Professionalism (DME) • Orientation to integrated modular system (DME) • Lecture on feedback (DME) • Mission and vision (DME) • Introduction to Pharmacology • Routs of drug administration (Pharmacology) • Absorption of drugs (Pharmacology) • Factors affecting drug absorption (Pharmacology) • Distribution of drugs (Pharmacology) • Introduction to Pathology • Cellular response to injury (Pathology) • Intracellular accumulations (Pathology) • Pigments (Pathology) • Free radical and reactive oxygen species (Pathology) • Irreversible cell injury/apoptosis (Pathology) • Genetic disorders (Pathology) • Introduction to Community Medicine (Community Medicine) • Introduction to medicine (Medicine) • History of medicine (Medicine) • Medicine and allied subjects (Medicine) • Chromosomal abressions (Medicine) • History taking and general physical examination (Medicine)

Categorization of Modular Content of Anatomy:

Category A*	Category B**		Category C ***			
General Embryology	General Histology	General Anatomy	Demonstrations / SGD	CBL	Practical's	Self-Directed Learning (SDL)
Introduction to human development Oogenesis Spermatogenesis Female reproductive cycles Ovulation and fertilization Cleavage and blastocyst formation development of mammary gland	Types of epithelium Specialization of apical cell surface Intercellular junction and adhesions Glandular epithelium Histology of mammary gland	Introduction to General anatomy	Anatomicomedical terminologies I Anatomicomedical terminologies II (Anatomical terms and axis of movements) Anatomicomedical terminologies III (Cell and tissues) Anatomicomedical terminologies IV (Skin & Body system) Clavicle Scapula Humerus Anterior axioappendicular muscles Posterior axioappendicular muscles Axilla Brachial plexus & injuries Breast Sternoclavicular and acromioclavicular joints Radiograph and surface anatomy of axioappendicular region	Clavicle Brachial plexus injuries	Introduction to microscope, Slide preparation artifact Simple epithelium Stratified epithelium Mammary gland	Clavicle Scapula Anterioraxioappendicular muscles Posterior axioappendicular muscles Axilla brachial plexus Injuries of brachial plexus Breast

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

Sr. #	Designation Of Teaching Staff / Human Resource	Total Number Of Teaching Staff
1.	Professor of Anatomy department	01
2.	Associate professor of Anatomy department	01
3.	Assistant professor of Anatomy department (AP)	01
4.	Demonstrators of Anatomy department	03

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$2 * 13 = 26$ hours
2.	Small Group Discussions (SGD)	$2*12+ 1*2=26$ hours
3.	Case Based Learning (CBL)	$2* 2 = 4$ hours
4.	Practical / Skill Lab	$1.5 * 20 = 30$ hours

Categorization of Modular Content of Physiology:

Category A*	Category B**	Category C***				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
Introduction To Physiology Department (By Prof Dr. Samia Sarwar)	Concept of body fluids & internal environment (By Dr. Sidra Hamid)		Body Fluid Compartment, Cell Membrane and Cytoskeleton, Down's Syndrome	Introduction to Microscope Introduction to Wintrobe and Westergen tube Apparatus identification (Introduction to Neubauer's chamber, Red Blood Cell (RBC) pipettes & White Blood Cell (WBC) pipette 4. Apparatus identification (Introduction to centrifuge machine)	Functional Organization of Human Body and Cell Physiology Cellular Control Mechanism, Cell Cycle and programmed cell death / apoptosis	Concept of body fluids & internal environment Genetics, Transcription and Translation Receptor and signal transduction Structure of Nucleus, Ribosomes and Cell Division Cellular Control Mechanism, Cell Cycle and programmed cell death / apoptosis
Homeostasis Control System-I (Negative Feedback System, Concept Of Error And Gain) (By Prof Dr. Samia Sarwar)	Intracellular communication and cell junction (By Dr. Sidra Hamid)					
Homeostasis Control System-II (positive feedback, and concept of feed forward, adaptive control and vicious cycle) (By Prof Dr. Samia Sarwar)	Receptor and signal transduction (By Dr. Sidra Hamid)					
Structure of Nucleus, Ribosomes and Cell Division (By Prof Dr. Samia Sarwar)	Active Transport- Ii (Secondary Active Transport) (Dr. Sheena Tariq)					
Cell membrane & classification of cell organelles (By Dr. Shmyla Hamid)						

Cell organelles & related cell function – I (By Dr. Shmyla Hamid)						
Cell organelles & related cell function – II (By Dr. Shmyla Hamid)						
Genetics, Transcription and Translation (By Dr. Shmyla Hamid)						
Active Transport- I (Primary Active Transport) (By Dr. Shmyla Hamid)						

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / Human Resource	Total Number Of Teaching Staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	$2 * 18 = 36$ hours
2.	Small Group Discussions (SGD)/CBL	$1\text{hr } 40\text{ mint} * 20 = 33\text{ hrs.} \& 20\text{ mint} + 1\text{hr} = 34\text{hrs} \& 20\text{ minutes}$
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	$1\text{hour } 40\text{ minutes} * 20 = 33\text{ hours and } 20\text{ minutes}$
5.	Self-Directed Learning (SDL)	$1\text{hour} * 8 = 8$ hours

Categorization of Modular Content of Department Of Biochemistry:

Category A*	Category B**	Category C***			
LGIS	LGIS	PBL	CBL	Practical's	SGD
Nucleic Acids	Cell & cell organelles		Enzymes PCR	Introduction to glassware (pipetting)	Cell & Cell Membrane
Nucleic acid Chemistry	Cell membrane			Surface Tension Emulsion	Physicochemical Aspects of cell
Replication	Transport across cell membrane			Adsorption	
Transcription	Physicochemical aspects			Tonicity	
Translation	Water & PH				
Mutation	Cancer				
Recombinant DNA/ PCR	Enzymes				

Category A*: By Hod and Assistant Professor

Category B:** By All (Hod, Assistant Professors, Senior Demonstrators)

Category C*:** (By All Demonstrators)

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation Of Teaching Staff / Human Resource	Total Number Of Teaching Staff
1	Assistant professor of biochemistry department (AP)	02
2	Demonstrators of biochemistry department	08

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	$2 * 11 = 22$ hours	11
2.	Small Group Discussions (SGD)	$1.5 * 6 = 09$ hours	09
3.	Problem Based Learning (PBL)	$2 * 1 = 2$ hours	02
4.	Practical / Skill Lab	$1.5 * 04$	06
5.	Self-Directed Learning (SDL)	$1 * 8 = 8$ hours	08

Time Table For Foundation Module (First Week) (13-02-2023 To 18-02-2023)

Date/Day	8:30 AM – 11:00 AM	11:00 AM – 11:40AM	11:40 AM – 12:20 PM				12:20-PM – 02:00 PM		
13-02-2023 Monday	Welcome address by VC Introduction to RMU, Allied hospitals, Introduction to Medical Education Department & Integrated Modular System, Introduction to basic & clinical sciences & IT Services	Introduction To Anatomy Department	Introduction To Physiology Department &		Introduction to Biochemistry Department		Anatomy Bio data forms		
HR	Vice Chancellor RMU: Prof. Dr. Muhammad Umar Principle RMC: Prof Dr. Jahangir Sarwar Prof. Dr. Rai Muhammad Asghar: Director Medical Education * Director IT *	Prof. Dr. Ayesha Yousaf (HOD& DEAN)**	Prof. Dr. Samia Sarwar **		Dr. Aneela**		Dr. Zeneera (Even)	Dr. Urooj (Odd)	
14-02-2023 Tuesday	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM		11:00 AM – 12:00 PM		12:20-2:00 PM		
	BEHAVIORAL SCIENCES(LGIS)	PHARMACOLOGY	PATHOLOGY	COMMUNITY MEDICINE (LGIS)	FAMILY MEDICINE	ARTIFICIAL INTELLIGENCE	Physiology & Biochemistry bio data forms		
	Introduction to Behavioral Sciences	Introduction to Pharmacology and Pathology (Teachers will switch at 9:30 am)		Introduction to community medicine & IUGRC	Introduction to family medicine	Introduction to AI			
HR	Prof. Dr. Muhammad Munir (Even)	Dr. Sadia Yasir (Odd)	Dr. Mudasira (Even)	Dr. Omaima (Odd)	Dr. Sana Bilal (Even)	Dr. Khaula Noreen (Odd)	Dr. Sadia Khan	Dr. Fawad	
15-02-2023 Wednesday	8:00 AM- 10:00AM		10:00 AM – 11:00 AM		11:00 AM – 12:00 PM		12:20-2:00 PM		
	DISSECTION / SGD		BEHAVIORAL SCIENCES(LGIS)		PHYSIOLOGY (LGIS)		BIOCHEMISTRY (LGIS)		
	Anatomicomedical terminologies I (positions and planes)		Management of stress		Cell Physiology & homeostasis	Concept of body fluids & Internal environment		Cell Organelles (1)	Cell membrane
HR	3 Demonstrators 3 Batches of Students		Dr. Sadia (Even)	Dr. Zona (Odd)	Dr. Shmyla Hamid (Even)	Dr. Sidra Hamid (Odd)		Dr. Shahrkh Khan (Even)	Dr. Kashif Rauf (Odd)
16-02-2023 Thursday	8:00 AM – 10:00 AM	10:00 – 11:00AM	11:00- 12:00PM		12:00 – 01:00PM		1:00-2:00 PM		
	DISSECTION/SGD	DME	PHYSIOLOGY (LGIS)		ANATOMY (LGIS)		COMMUNITY MEDICINE		
	Anatomicomedical terminologies II (Anatomical terms and axis of movements)	Introduction To Different Teaching Strategies, Role of Team Leader Facilitator and Students SGD/LGIS/TBL/PAL/INTERNET & Literature Group activity	Concept of body fluids & Internal environment	Cell Physiology & homeostasis	Embryology	General Anatomy		Introduction to Health Research process and researcher (Research-I)	
HR	3 Demonstrators 3 Batches of Students	Dr. Sidra Hamid (Even)	Dr. Rizwana Shahid (Odd)	Dr. Sidra Hamid (Even)	Dr. Shmyla (Odd)	Prof. Dr. Ayesha Yousaf (Even)	Ass. Prof. Dr Arslan (Odd)	Dr. Rizwana (Even)	Dr. Uzma Hayat (Odd)
17-02-2023 Friday	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM		11:00 AM – 12:00 PM				
	ISLAM & MEDICAL SCIENCE	QURAN TRANSLATION	ANATOMY LGIS		DME		PHARMACOLOGY		
	Islam And Medical Science	Introduction to Quran Translation	General Anatomy	Embryology	Leadership & Professionalism	Orientation to Integrated modular system	Routes of drug administration		
HR	Moulana Abdul Wahid (Even)	Mufti Naeem Sherazi (Odd)	Ass. Prof. Dr Arsalan (Even)	Prof. Dr. Ayesha Yousaf (Odd)	Dr. Arsalan (Even)	Dr Sidra Hamid (Odd)	Dr Omaima (Even)	Dr Zunera (Odd)	
18-02-2023 Saturday	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM		11:00 AM – 12:00 AM		12:00 AM – 1:00 PM		
	DISSECTION/SGD	DME	MEDICINE		BIOCHEMISTRY (LGIS)		1:00 - 2:00 PM		
	Anatomicomedical terminologies III (Cell and tissues)	Orientation to Integrated modular system	Leadership & Professionalism	Introduction to medicine		Cell membrane	Cell Organelles-I		
HR	3 Demonstrators 3 Batches of Students	Dr Sidra Hamid (Even)	Dr. Arslaan (Odd)	Dr. Sadaf Zaman (Even)	Dr. Sana Ahmed (Odd)	Dr. Kashif Rauf (Even)	Dr. Shahrkh Khan (Odd)	Dr. Rizwana (Even)	Dr. Uzma Hayat (Odd)

BREAK 12:00 – 12:20PM

Details of Venue & Batches

Schedule For Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion			
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera Saqib	Lecture Hall No.03 Anatomy Lecture Hall
Tuesday	D	C	A	B	E	B	121-240	Dr Urooj Shah	Lecture Hall No.04 Anatomy Lecture Hall
Wednesday	E	D	B	C	A	C	241-onwards	Dr Ali Raza	Dissection Hall
Thursday	B	A	D	E	C				
Saturday	A	E	C	D	B				

Venue For First Year Batches For PBL & SGD Team-I				Sr. No	Batch	Roll no	Names of Teachers		
Batches	Roll No	Venue					Biochemistry	Physiology	
Batch-A1	(01-35)	Lecture Hall no.05 (Physiology)	Dr. Sheena Tariq	1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq	
Batch-A2	(36-70)	Lecture Hall no.04 (1 st Floor Anatomy)	Dr. Uzma Kiani	2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani	
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)	Dr. Fahd Anwar	3.	Batch –C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar	
Batch-B2	(106-140)	Conference room (Basement)	Dr. Fareed Ullah	4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas	
Batch-C1	(141-175)	Lecture Hall NO. 04 (Basement)	Dr. Maryam Abbas (PGT Physiology)	5.	Batch -E	281-onwards	Dr. Faiza Zafar	Dr. Fareed	
Batch-C2	(176-210)	Lecture Hall NO. 05 (Basement)	Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall NO. 03 (First Floor)	Dr. Iqra Ayub (PGT Physiology)	Venues for Large Group Interactive Session (LGIS) and SDL					
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)	Dr. Shahrukh (PBL) Dr. Muhammad Usman (SGD)	Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03		
Batch-E1	(281-315)	Lecture Hall no.01	Dr. Ismail (PGT Physiology)	Even Roll Number			New Lecture Hall Complex Lecture Theater # 02		
Batch-E2	(315 onwards)	Lecture Hall no.02	Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Time Table For Foundation Module (Second Week)
(20-02-2023 To 25-02-2023)

DATE/ DAY	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM	11:00 AM – 12:00 AM	12:20 PM TO 02:00PM	Home Assignment		
20-02-2023 Monday	DISSECTION/ SGD		BIOETHICS		PHYSIOLOGY (LGIS)			
	Anatomicomedical terminologies IV (Skin and body systems)		Introduction to History of Medical Ethics Dr Sidra Hamid (Odd)	Dr. Kashif (Even)	Cell membrane & classification of cell organelles Dr. Shmyla Hamid (Even)	Intracellular communication and cell junction Dr. Sidra Hamid (Odd)	SDL Physiology Homeostasis	
21-02-2023 Tuesday	SGD/CBL		PHYSIOLOGY SSGD		PHYSIOLOGY (LGIS)			
	Clavicle		Concept Of Body Fluid and Internal Environment PHYSIOLOGY TEAM I		Intracellular communication and cell junction Dr. Sidra Hamid (Even)	Cell membrane & classification of cell organelles Dr. Shmyla Hamid (Odd)	SDL physiology Homeostatic control mechanism	
22-02-2023 Wednesday	Dissection / SGD		PATHOLOGY (LGIS)		PHARMACOLOGY LGIS			
	Scapula		Cellular response to Injury Dr. Abid (Even)	Dr Ayesha (Odd)	Absorption of drugs Dr. Zunera (Even)	Dr Omaima (Odd)	SDL Biochemistry Cell organelles	
23-02-2023 Thursday	COMMUNITY -MEDICINE		BIOCHEMISTRY LGIS		PATHOLOGY (LGIS)			
	Basics of Ethics in Health Research (Research-III) Dr Uzma Hayat (Even)		Cell Organelle-II Dr. Shahrukh (Even)	Transport across cell membrane Dr. Khsif (Odd)	Intra Cellular accumulation Dr. Abid (Even)	Dr Ayesha (Odd)	Cell organelles & cell function - I Dr. Shmyla (Even)	Receptor and signal transduction Dr. Sidra Hamid (Odd)	SDL Biochemistry Cell Membrane Transport Across Cell Membrane
24-02-2023 Friday	BIOCHEMISTRY LGIS		ISLAM AND MEDICAL SCIENCE		PHYSIOLOGY (LGIS)			
	Transport across cell membrane Dr. Kashif Rauf (Even)	Cell organelle-II Dr. Shahrukh (Odd)	Introduction to Quran translation Mufti Naeem Sherazi (Even)	Islam And Medical Science Moulana Abdul Wahid (Odd)	Receptor and signal transduction Dr. Sidra Hamid (Even)	Cell organelles & related cell function - I Dr. Shmyla Hamid (Odd)	Factors affecting Absorption of drugs Dr. Zunera (Even)	Dr Omaima (Odd)	SDL Anatomy clavicle
25-02-2023 Saturday	DISSECTION/ SGD		BIOCHEMISTRY (LGIS)		PHARMACOLOGY (LGIS)			
	Humerus		Physico chemical aspects-I Dr. Almas Ijaz (Even)	Physico chemical aspects-I Dr. Nayab (Odd)	Distribution of drugs Dr. Omaima (Even)		Dr Zunera (Odd)	SDL Anatomy Scapula

BREAK 12:00 – 12:20PM

BREAK

Topics For Practical with Venue						Topics For Small Group Discussion& CBLs With Venue				
<ul style="list-style-type: none"> • Introduction to Microscope and Preparation of Slide. Artifacts (Anatomy/Histology-practical) venue-Histology Laboratory (Dr. Ali Raza) • Introduction to glass wares (Pipetting) (Biochemistry practical) venue- Biochemistry lab) • Introduction to Microscope. (Physiology-Practical (Physiology Laboratory) 						<ul style="list-style-type: none"> • Physiology small group discussion-Functional organization of human body and cell physiology venue-Lecture Hall 5 • Biochemistry small group discussion – Cell& Cell membrane- Lecture Hall 3 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera Saqib	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	121-240	Dr Urooj Shah	Lecture Hall No.04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	241-onwards	Dr Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C					
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL & SGD Team-I						Sr.No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue						Biochemistry	Physiology	
Batch-A1	(01-35)	Lecture Hall no.05 (Physiology)			Dr. Sheena Tariq	1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	Lecture Hall no.04 (1 st Floor Anatomy)			Dr. Uzma Kiani	2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)			Dr. Fahd Anwar	3.	Batch –C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)			Dr. Fareed ullah	4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas
Batch-C1	(141-175)	Lecture Hall NO. 04 (Basement)			Dr. Maryam Abbas (PGT Physiology)	5.	Batch -E	281-onwards	Dr. Faiza Zafar	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall NO. 05 (Basement)			Dr. Nayab (PGT Physiology)					
Batch-D1	(210-245)	Lecture Hall NO. 03 (First Floor)			Dr. Iqra Ayub (PGT Physiology)					
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)			Dr. Shahrukh (PBL) Dr. Muhammad Usman (SGD)				Venues for Large Group Interactive Session (LGIS) and SDL	
Batch-E1	(281-315)	Lecture Hall no.01			Dr. Ismail (PGT Physiology)				Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Batch-E2	(315 onwards)	Lecture Hall no.02			Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)				Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Time Table For Foundation Module (Third Week) (27-02-2023 To-04-03-2023)

DATE/DAY	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM	11:00 AM – 12:00 PM	12:20 PM – 02:00 PM	Home Assignment	
27-02-2023 Monday	DISSECTION / SGD		MEDICINE		BIOCHEMISTRY LGIS		
	Anterior axioappendicular muscles		History of Medicine		Physico chemical aspects-I	Physico chemical aspects-I	
Dr. Saleha Imran (Odd)			Dr. Ayesha Habib (Even)	Dr. Nayab (Even)	Dr. Almas (Odd)		
28-02-2023 Tuesday	DISSECTION / SGD		(ANATOMY LGIS)		PHYSIOLOGY (LGIS)		
	Posterior axioappendicular muscles		Histology	Embryology	Cell organelles & cell function - II	Homeostasis Control System- I (Negative Feedback System, Concept of Error and Gain)	
			Types of epithelium	Gametogenesis (Oogenesis)			
Associate. Prof			Prof. Dr. Ayesha	Dr. Shmyla Hamid	Prof. Dr. Samia Sarwar /Dr. Uzma		
01-03-2023 Wednesday	BIOCHEMISTRY (LGIS)		PATHOLOGY LGIS		ANATOMY LGIS		
	Physico chemical aspects-II	Physico chemical aspects-II	Pigments		Embryology	Histology	
	Dr. Almas (Even)	Dr. Nayab (Odd)	Dr. Abid (Even)	Dr Ayesha (Odd)	Gametogenesis -(Oogenesis)	Types of Epithelium	
02-03-2023 Thursday	PEADS		COMMUNITY MEDICINE		BIOCHEMISTRY		
	Medical genetic & dysmorphology		Basics of Ethics in Health Research (Research -IV)		Physico chemical aspects-II	Physico chemical aspects-II	
					Genetics, transcription & translation	Homeostasis Control System-II (positive feedback, and concept of feed forward, adaptive control and vicious cycle)	
Dr. Safdar Ijaz (Even)					Dr. Maria Shamsheer (Odd)	Dr Uzma Hayat (Even)	Dr Rizwana (Odd)	Dr. Almas (Odd)	Dr. Nayab (Even)	Dr. Shmyla Hamid (Even)	Prof. Dr. Samia Sarwar /Dr. Uzma (Odd)
03-03-2023 Friday	MEDICINE		DME		BIOCHEMISTRY		
	Medicine And Allied Subjects		Lecture on Feedback	Lecture on Mission & Vision	pH & Water	Nucleic acid chemistry	
Dr. Umer Daraz (Even)			Dr. Iqra Ashraf (Odd)	Dr. Sidra Hamid (Even)	Dr. Arsalan (Odd)	Dr. Shahrukh (Even)	Dr. Anoosh (Odd)	Prof. Dr. Samia Sarwar /Dr. Uzma (Even)	Dr. Shmyla Hamid (Odd)
04-03-2023 Saturday	Dissection		Anatomy LGIS		BIOCHEMISTRY (LGIS)		
	Dissection / Spotting		Embryology	Embryology	Nucleic acid chemistry	pH & Water	
			Gametogenesis	Gametogenesis			
Prof. Dr. Ayesha (Odd)			Associate. Prof Dr. Mohtashim	Dr. Shahrukh (Odd)	Dr. Anoosh (Even)	Cell membrane ion channels, transport across cell membrane	Structure of nucleus, ribosomes and cell division
Dr. Shmyla Hamid (Even)							Dr. Uzma (Odd)

BREAK 12:00PM TO 12:20PM

12:00pm – 12:30pm

Online LMS Assessment Will be Conducted in Evening (Date and time will be shared with separate notification)

Topics For Practical with Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> Simple Epithelium (Anatomy/Histology-practical) venue-Histology Laboratory (Dr. Zeneera) Physiochemical aspects of cell - surface tension and Emulsion (Biochemistry practical) venue- Biochemistry Lab) Introduction to Wintrobe & Westergen tube (Physiology-Practical (Physiology Laboratory)) 						<ul style="list-style-type: none"> Physiology CBL –Body fluid compartment, cell membrane & cytoskeletal-venue-Lecture Hall 5 (First Floor) Biochemistry Small Group Discussion - Physico chemical aspects of cell membrane - Lecture Hall 3 (First Floor) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera Saqib	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	121-240	Dr Urooj Shah	Lecture Hall No.04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	241-onwards	Dr Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C					
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	Lecture Hall no.05 (Physiology)		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	Lecture Hall no.04 (1 st Floor Anatomy)		Dr. Uzma Kiani		2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)		Dr. Fahd Anwar		3.	Batch –C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareed Ullah		4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas
Batch-C1	(141-175)	Lecture Hall NO. 04 (Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch -E	281-onwards	Dr. Faiza Zafar	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall NO. 05 (Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall NO. 03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Muhammad Usman (SGD)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03	
Batch-E1	(281-315)	Lecture Hall no.01		Dr. Ismail (PGT Physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02	
Batch-E2	(315 onwards)	Lecture Hall no.02		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						
						Venues for Large Group Interactive Session (LGIS) and SDL				

Time Table For Foundation Module (Fourth Week) (06-03-2023 To 11-03-2023)

DATE / DAY	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM	11:00 AM – 12:00 PM	12:20 PM – 02:00 PM	Home Assignment				
06-03-2023 Monday	BIOCHEMISTRY (LGIS)		ANATOMY (LGIS)		PATHOLOGY SGD		PHYSIOLOGY(LGIS)		Practical &CBL Topics & Venue mentioned at the end	SDL Physiology Genetics, transcription & translation
	Cancer	PH & Water-II	Histology	Embryology	Free Radicals/ Reactive Oxygen Species (ROS).		Structure of nucleus, ribosomes and cell division	Cell membrane ion channels, transport across cell membrane		
	Dr. Almas (Even)	Dr. Shahrukh (Odd)	Ass. Prof. Dr Mohtashim (Even)	Prof. Dr. Ayesha (Odd)	Dr. Abid (Even)	Dr Ayesha (Odd)	Dr. Uzma (Even)	Dr. Shmyla Hamid (Odd)		
07-03-2023 Tuesday	BIOCHEMISTRY (LGIS)		ANATOMY(LGIS)		DME		BIOCHEMISTRY (LGIS)		Practical &CBL Topics & Venue mentioned at the end	SDL Physiology Structure of nucleus ribosome's & cell division
	PH & Water-II	Cancer	Embryology	Histology	Mission and vision lecture	Lecture on Feedback	Nucleic acid II	Intro and classification of enzymes		
	Dr. Shahrukh (Even)	Dr. Almas (Odd)	Prof. Dr. Ayesha (Even)	Ass. Prof. Dr Mohtashim (Odd)	Dr. Arsalan (Even)	Dr. Sidra Hamid (Odd)	Dr. Anoosh (Even)	Dr. Uzma Zafar (Odd)		
08-03-2023 Wednesday	DISSECTION / SGD				PATHOLOGY (LGIS)		PHYSIOLOGY (LGIS)		Practical &CBL Topics & Venue mentioned at the end	SDL Biochemistry Nucleic Acid Chemistry Online SDL Evaluation will be conducted from 12 to 12.30 noon
	Axilla				Irreversible injury / Necrosis		Transport across cell membrane, Osmosis	Cellular control mechanism, cell cycle programmed cell death/ apoptosis		
					Dr. Abid (Even)	Dr Ayesha (Odd)	Dr. Shmyla Hamid (Even)	Dr. Uzma (Odd)		
09-03-2023 Thursday	ANATOMY LGIS		BIOCHEMISTRY (LGIS)		SURGERY		PHYSIOLOGY (LGIS)		Practical &CBL Topics & Venue mentioned at the end	SDL Biochemistry Cancer
	Histology	Embryology	Intro. & classification of Enzymes	Nucleic acid-II	Breast surgery		Cellular control mechanism, cell cycle programmed cell death/ apoptosis	Transport across cell membrane, Osmosis		
	Intercellular junctions and adhesions	Ovulation and fertilization	Dr. Uzma Zafar (Even)	Dr. Anoosh (Odd)	Dr. Ali Kamran (Even)	Dr. Samra Riaz (Odd)	Dr. Uzma (Even)	Dr. Shmyla Hamid (Odd)		
	Ass. Prof. Dr. Mohtashim (Even)	Prof. Dr. Ayesha (Odd)								
10-03-2023 Friday	PATHOLOGY LGIS.		ANATOMY (LGIS)		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		SDL Anatomy Axilla	
	Irreversible Injury Apoptosis		Embryology	Histology	Properties/factors of Enzymes	Replication	Active Transport I	Active Transport II		
			Ovulation and fertilization	Intra cellular junctions & adhesions						
	Dr. Abid (Even)	Dr Ayesha (Odd)	Prof. Dr Ayesha (Even)	Ass. Prof. Dr Muhtashim (Odd)	Dr. Uzma Zafar (Even)	Dr. Anoosh (Odd)	Dr. Shmyla Hamid (Even)	Dr. Sheena (Odd)		
11-03-2023 Saturday	DISSECTION / SGD				BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		Practical &CBL Topics & Venue mentioned at the end	SDL Anatomy Brachial plexus
	Brachial plexus				Replication	Properties/factors of Enzymes	Active Transport II	Active Transport I		
					Dr. Anoosh (Even)	Dr. Uzma Zafar (Odd)	Dr. Sheena (Even)	Dr. Shmyla Hamid (Odd)		

Online SDL Evaluation Will be Conducted on 8th March,2023


Topics For Practical with Venue						Topics For Small Group Discussion& CBLs With Venue				
<ul style="list-style-type: none"> Stratified epithelium & transitional epithelium (Anatomy/Histology-practical) venue- Histology Laboratory (Dr. Urooj) Physiochemical aspects of cell- Adsorption (Biochemistry practical) venue- Biochemistry laboratory) Apparatus identification (Introduction to Neubauer's chamber, Red Blood Cell (RBC) pipettes& White Blood Cell (WBC) pipette (Physiology-Practical (Physiology Laboratory) 						<ul style="list-style-type: none"> Physiology CBL Down's syndrome – (venue-Lecture Hall 5) Biochemistry CBL – Enzymes-Lecture Hall 3 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera Saqib	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	121-240	Dr Urooj Shah	Lecture Hall No.04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	241-onwards	Dr Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C					
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	Lecture Hall no.05 (Physiology)		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	Lecture Hall no.04 (1 st Floor Anatomy)		Dr. Uzma Kiani		2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)		Dr. Fahd Anwar		3.	Batch – C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareed ullah		4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas
Batch-C1	(141-175)	Lecture Hall N0. 04 (Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch -E	281-onwards	Dr. Faiza Zafar	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall NO. 05 (Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall NO. 03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)					Venues for Large Group Interactive Session (LGIS) and SDL	
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Muhammad Usman (SGD)		Odd Roll Numbers		New Lecture Hall Complex Lecture Theater # 03		
Batch-E1	(281-315)	Lecture Hall no.01		Dr. Ismail (PGT Physiology)		Even Roll Number		New Lecture Hall Complex Lecture Theater # 02		
Batch-E2	(315 onwards)	Lecture Hall no.02		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Time Table For Foundation Module (Fifth Week)
(13-03-2023 To 18-03-2023)

DATE / DAY	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM	11:00 AM – 12:00 PM	12:20 PM – 02:00 PM	Home Assignment		
13-03-2023 Monday	DISSECTION / CBL		MEDICINE(LGIS)		ANATOMY (LGIS)			
	Brachial plexus injuries		Chromosomal Abrassions		Embryology	Histology		
Dr. Madiha Nazr (Odd)			Dr. Mudassir (Even)	Cleavage and formation of blastocyst	Glands			
14-03-2023 Tuesday	DISSECTION		BIOCHEMISTRY (LGIS)		GYNAE & OBS			
	Breast		Transcription	MM Equation	Introduction to fertilization . implantation. Embryogenesis and congenital anomalies			
Dr. Aneela (Even)			Dr. Uzma Zafar (Odd)	Dr. Nighat Naheed (Even)	Dr. Sobia Nawaz (Odd)			
15-03-2023 Wednesday	DISSECTION / SGD	PATHOLOGY(LGIS)		BIOCHEMISTRY (LGIS)		BIOCHEMISTRY (LGIS)		
	Dissection/spotting	Genetic disorder		MM Equation	Transcription		Recombinant DNA/ PCR	Mutation
				Dr. Uzma Zafar (Even)	Dr. Aneela (Odd)		Dr. Kashif Rauf (Even)	Dr. Aneela Jamil (Odd)
16-03-2023 Thursday	DISSECTION / SGD		BIOCHEMISTRY (LGIS)		ANATOMY (LGIS)			
	Sternoclavicular and acromioclavicular joints		Translation	Regulation of Enzyme Activity	Histology	Embryology		
Dr. Aneela (Even)			Dr. Uzma Zafar (Odd)	Glands	Cleavage and formation of blastocyst			
17-03-2023 Friday	DISSECTION / SGD		BIOCHEMISTRY (LGIS)		MEDICINE(LGIS)			
	Radiograph/Surface anatomy of axioapendicular region		Regulation of Enzyme Activity	Translation	History Taking and General Physical Examination			
Dr. Uzma Zafar (Even)			Dr. Aneela (Odd)	Dr. Imran Saeed (Odd)	Dr. Saima Mir (Even)			
18-03-2023 Saturday	Dissection/Spotting		ANATOMY (LGIS)		BIOCHEMISTRY (LGIS)			
			Histology & Development of Mammary Gland	Histology & development of Mammary Gland	Mutation	Recombinant DNA/ PCR		
			Ass. Prof. Dr Mohtasham (Even)	Prof. Dr. Ayesha (Odd)	Dr. Aneela Jamil (Even)	Dr. Kashif Rauf (Odd)		
Online Clinical Evaluation will be conducted from 12 to 12,15 noon on 16 th March,2023								

Topics For Practical with Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> Mammary Gland (Anatomy/Histology-practical) Venue-Histology Laboratory (Dr. Ali Raza) Tonicity (Biochemistry practical) Venue- Biochemistry laboratory Apparatus identification (Introduction to centrifuge machine) (Physiology-Practical) Venue-Physiology Laboratory 						<ul style="list-style-type: none"> Physiology SGD – Cellular control mechanism, cell cycle, programmed cell death, Apoptosis Biochemistry CBL – Genetics (PCR) - Lecture Hall 3 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera Saqib	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	121-240	Dr Urooj Shah	Lecture Hall No.04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	241-onwards	Dr Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C					
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	Lecture Hall no.05 (Physiology)		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	Lecture Hall no.04 (1 st Floor Anatomy)		Dr. Uzma Kiani		2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)		Dr. Fahd Anwar		3.	Batch – C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareed ullah		4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas
Batch-C1	(141-175)	Lecture Hall NO. 04 (Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch -E	281-onwards	Dr. Faiza Zafar	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall NO. 05 (Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall NO. 03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Muhammad Usman (SGD)					Venues for Large Group Interactive Session (LGIS) and SDL	
Batch-E1	(281-315)	Lecture Hall no.01		Dr. Ismail (PGT Physiology)			Odd Roll Numbers		New Lecture Hall Complex Lecture Theater # 03	
Batch-E2	(315 onwards)	Lecture Hall no.02		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)			Even Roll Number		New Lecture Hall Complex Lecture Theater # 02	

Time Table For Foundation Module (Sixth Week)
(20-03-2023 To 25-03-2023)

20-03-2023 Monday	Anatomy Viva Voce (Roll no :1-180 students) & Physiology Viva Voce (Roll no :181 to 322 students)
21-03-2023 Tuesday	Physiology Viva Voce (Roll no :1-180 students) & Anatomy Viva Voce (Roll no :181 to 322 students)
22-03-2023 Wednesday	Anatomy Theory Paper & MOCK OSPE
23-03-2023 Thursday	Pakistan Day 
24-03-2023 Friday	Physiology theory Paper& Mock Video Assisted Quiz
25-03-2023 Saturday	Biochemistry Theory paper& Allied

Note: Timetable Subject to Change According To The Current Circumstances

(Logistic details of Assessments will be notified separately)

SECTION VI

Table of Specification (TOS) For Foundation Module Examination for First Year MBBS

Sr. #	Discipline	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Viva voce	Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3		
1.	Anatomy	25	15	5	5	5	25	1	2	2	50	100
2.	Physiology	20	12	6	2	4	20	1	2	1	40	90
3.	Biochemistry	20	10	9	1	3	15	0.5	1.5	1		35
4.	Medical education	5										5
5.	Bioethics & Professionalism	1										1
6.	Research, Artificial Intelligence & Innovation	10										10
7.	Pharmacology	2										2
8.	Pathology	3										3
9.	Medicine	2										2
10.	Surgery	1										1
11.	Obs & Gynaecology	1										1
Grand Total											250	

Annexure I

(Sample MCQ & SEQ papers)

RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT
1ST YEAR MBBS MCQs FOUNDATION MODULE EXAM

1. In a CT scan, a frame is taken longitudinally through the sagittal suture. This plane is also called as
 - a. Median Plane
 - b. Para Saggital plane
 - c. Coronal Plane
 - d. Frontal plane
 - e. Transverse plane
3. After a road traffic accident, a patient presented in ER with pain Upper limb. Radiologist reported the fracture of medial epicondyle of humerus. The nerve prone to injury at this level of humerus is:
 - a. Axillary nerve
 - b. Ulnar nerve
 - c. Median nerve
 - d. Radial nerve
 - e. Scapular nerve
5. Most of lymph of breast drains to:
 - a. Pectoral lymph nodes.
 - b. Internal thoracic lymph nodes.
 - c. Apical lymph nodes.
 - d. Central lymph nodes.
 - e. Subscapular lymph node.
2. During assessment of motor system of the upper limb, the doctor supinates the upper limb. During this movement there is a
 - a. Decrease in the angle at the elbow joint
 - b. Increase in the angle at the elbow joint
 - c. Rotation of the forearm and hand laterally from the midprone position
 - d. Rotation of the forearm and hand medially from the midprone position
 - e. Movement such as palm of the hand faces posteriorly
4. During clinical examination of a 52 years old female, a swelling was found under the skin of chest coinciding with the lateral border of teres major. The group of lymph nodes most likely involved is
 - a. Anterior axillary
 - b. Posterior axillary
 - c. Apical
 - d. Central
 - e. Infraclavicular

RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT
1ST YEAR MBBS SEQs FOUNDATION MODULE EXAM

Note: Attempt all questions. All questions carry equal marks. Draw diagram where necessary

1. During a difficult labour baby's upper limb was excessively pulled. Later on he developed right sided muscular weakness in forearm and a claw hand.
 - a. Name the condition he is suffering from? (1)
 - b. Give relations of brachial plexus with special reference to axillary artery. (2)
 - c. Enumerate nerves arising from roots and trunks of brachial plexus. (2)

2. A female patient of 42 years of age presented to hospital with painless swelling of left breast along that was firm and adherent to chest wall. On examination, oedematous skin was also present around the swelling.
 - a. Name the condition she may be suffering from (1)
 - b. Give anatomical reason why breast tissue is fixed to underlying chest wall(2)
 - c. Discuss lymphatic drainage of breast

RAWALPINDI MEDICAL UNIVERSITY
PHYSIOLOGY DEPARTMENT
1ST YEAR MBBS MCQs FOUNDATION MODULE EXAM

1. Peroxisomes contain:
 - a. Lipase
 - b. Oxidase
 - c. Hydrolase
 - d. ATPase
 - e. Transferase
3. Enzymes necessary for oxidative phosphorylation are present mainly in which part of mitochondria?
 - a. Cristae
 - b. Mitochondrial matrix
 - c. Outer membrane
 - d. Inner membrane
 - e. Outer chamber
5. The sequence of three DNA bases in a gene is called:
 - a. DNA polymer
 - b. Codon
 - c. Anticodon
 - d. Genetic code
 - e. Okazaki fragment
2. Gain of the feedback system is calculated by:
 - a. Gain= correction error
 - b. Gain error/ correction
 - c. Gain correction/error
 - d. Gain-correction-error
 - e. Gain-correction/error 100
4. Following part of cilia has ATPase activity:
 - a. Axoneme
 - b. Tubulin
 - c. Flagellum
 - d. Basal body
 - e. Dynein arm

RAWALPINDI MEDICAL UNIVERSITY
BIOCHEMISTRY DEPARTMENT
1ST YEAR MBBS MCQs FOUNDATION MODULE EXAM

1. Serum enzyme begins to raise in 4-8 hours of acute Myocardial Infarction is:
 - a. CKMB
 - b. LDH
 - c. AST
 - d. ALT
 - e. Gama GT
2. Fluidity of cell membrane is maintained by
 - a. Water
 - b. Triglycerides
 - c. Cholesterol
 - d. Integral protein
 - e. Peripheral protein
3. The nitrogen base in inosine monophosphate is:
 - a. Ionone
 - b. Inulin
 - c. Hypoxanthine
 - d. Xanthine
 - e. Inosine
4. Transfer RNA transfers:
 - a. Information from DNA to ribosomes
 - b. Information from mRNA to cytosol
 - c. Amino acid from cytosol to ribosomes
 - d. Proteins from cytosol to ribosomes
 - e. Protein form ribosome to Golgi apparatus

SEQ

- Q1. a. Describe different mechanisms of enzyme catalysis. 2.5
b. Explain Base Excision Repair of DNA. 2.5

RAWALPINDI MEDICAL UNIVERSITY
BIOETHICS DEPARTMENT
1ST YEAR MBBS MCQs FOUNDATION MODULE EXAM

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
 - a. Bio-piracy
 - b. Biosafety
 - c. Bioethics
 - d. Bio-patents
 - e. Bio-logistic
2. The right of patients having self-decision is called.
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
3. Following is not code of ethics.
 - a. Integrity
 - b. Objectivity
 - c. Confidentiality
 - d. Behaviour
 - e. Autonomy
4. -----in the context of medical ethics, if it's fair and balanced
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
5. -----Principle requiring that physicians provide, positive benefits
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity




Department of Medical Education (DME)

Musculoskeletal -I Module

Study Guide
First Year MBBS 2022 - 2023



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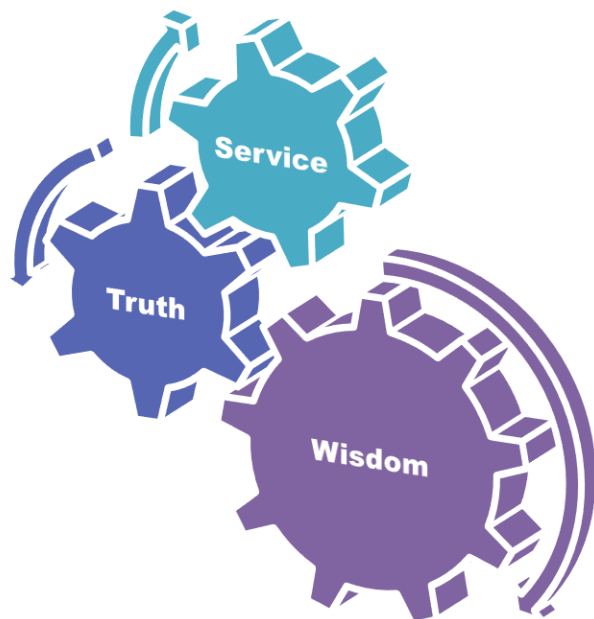
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RMU Motto



University Moto, Vision, Values & Goals

Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

First Year MBBS 2023

Study Guide

MSK-I Module

Discipline Wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
I	<ul style="list-style-type: none"> Anatomy 	Skeletal System <ul style="list-style-type: none"> Bones Joints 	General Embryology Second Week of Human Development till Placenta & Fetal Membranes	General Histology <ul style="list-style-type: none"> Connective Tissue Cartilage Bone 	Shoulder joint till Hand
	<ul style="list-style-type: none"> Biochemistry 	<ul style="list-style-type: none"> Minerals, Vitamins, Introduction & Classification of Amino Acids 			
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> NMJ, Introduction Concept of Motor Unit. Neuromuscular Transmission, Synthesis & Fate of Acetylcholine Drugs Acting On NMJ, Myasthenia Gravis, Lambert Eaton Syndrome Structure Of Neurons. Classification Of Neurons & Nerve Fibers Nernst Potential, RMP Recording & Propagation of Action Potential & Factors Effecting Nerve Conduction & Hyperpolarized State Stimulus & Response & Types of Stimuli, Stages of Action Potential 			
	<ul style="list-style-type: none"> Bioethics & Professionalism 	<ul style="list-style-type: none"> Islamic concept of Bioethics 			
	<ul style="list-style-type: none"> Research Club Activity 	<ul style="list-style-type: none"> Comprehend their role in under “theme and scheme” 			
	<ul style="list-style-type: none"> Family Medicine 	<ul style="list-style-type: none"> Approach to a patient with Body Pains 			
	<ul style="list-style-type: none"> Artificial Intelligence/Radiology 	<ul style="list-style-type: none"> Interpretation of upper limb Radiograph & use of AI 			
	<ul style="list-style-type: none"> Vertical components 	<ul style="list-style-type: none"> The Holy Quran Translation Component 			
<ul style="list-style-type: none"> Vertical Integration 	Clinically content relevant to musculoskeletal-I module <ul style="list-style-type: none"> Shoulder Dislocation (Surgery) Tennis elbow, Fracture of olecranon, Radius and Ulna (Surgery) Osteoporosis (Medicine) Osteomalacia, Rickets & Polyarthritis (Medicine) Accidents (Community Medicine) 				

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MSK-I Module Team

Module Name : MSK-I Module
 Duration of module : 05 Weeks
 Coordinator : Dr. Maria Tasleem
 Co-coordinator : Dr. Urooj Shah
 Reviewed by : Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Maria Tasleem (Assistant Professor of Anatomy)
2.	Director DME	Prof. Dr. Rai Muhammad Asghar	2.	DME Focal Person	Dr. Sidra Hamid
3.	Convener Curriculum	Prof. Dr. Naeem Akhter	3.	Co-coordinator	Dr. Urooj Shah (Demonstrator of Anatomy)
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf	4.	Co-Coordinator	Dr. Fahd Anwar (Senior Demonstrator of Physiology)
5.	Additional Director DME	Prof. Dr. Ifra Saeed	5.	Co-coordinator	Dr. Faiza Zafar (Senior Demonstrator of Biochemistry)
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar	DME Implementation Team		
7.	Chairperson Biochemistry	Dr. Aneela Jamil			
8.	Focal Person Anatomy First Year MBBS	Prof. Dr. Ayesha Yousaf	1.	Director DME	Prof. Dr. Rai Muhammad Asghar
9.	Focal Person Physiology	Dr. Sidra Hamid	2.	Implementation Incharge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
10.	Focal Person Biochemistry	Dr. Aneela Jamil	3.	Deputy Director DME	Dr. Shazia Zaib
11.	Focal Person Pharmacology	Dr. Zunera Hakim	4.	Module planner & Implementation coordinator	Dr. Sidra Hamid
12.	Focal Person Pathology	Dr. Asiya Niazi	5.	Editor	Muhammad Arslan Aslam
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir			
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom			
15.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar			

Module II – MSK-I Module

Rationale: This module deals with locomotor system. This module describes the structural organization, functions, and congenital anomalies of musculoskeletal system. It explains the mechanism of neuromuscular transmission, its biochemical basis and the importance of Ca⁺⁺ in the body. It depicts structure and function of joints in upper and lower limb. It elaborates identification of common fractures of long bones on radiograph.

Module Outcomes

At the end of this module the student should be able to:

Knowledge

- Explain the development & structure of musculoskeletal system.
- Explain the physiological and biochemical factors affecting Neuro Muscular transmission.
- Apply the knowledge of the basic sciences to understand common fractures.
- Appreciate concepts & importance of

Artificial Intelligence

Family Medicine

Biomedical Ethics

Research.

Skills

- Dissect limbs to demonstrate regional Anatomy and relationships of various structures to each other.
- Identify histological features of connective tissue and muscles under microscope.
- Perform practicals on estimation of calcium and protein chemistry.

Attitude

- Demonstrate **a professional attitude, team building spirit, good communication skills** and cadaveric handling.

This module will run in 5 weeks duration. Instructional strategies are given in the time table and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning
- Methodologies/Strategies
 - Large Group Interactive Session (LGIS)
 - Small Group Discussion (SGD)
 - Self-Directed Learning (SDL)
 - Case Based Learning (CBL)
 - Problem- Based Learning (PBL)
 - Skill Labs/Practicals (SKL)

Tables & Figures

- Table1. Domains of learning according to Blooms Taxonomy
- Figure 1. Prof Umar's Model of Integrated Lecture
- Table2. Standardization of teaching content in Small Group Discussions
- Table 3. Steps of taking Small Group Discussions
- Figure 2. PBL 7 Jumps Model

Table1. Domains Of Learning According to Blooms Taxonomy

Sr. #	Abbreviation	Domains of learning
1.	C	Cognitive Domain: knowledge and mental skills.
	• C1	Remembering
	• C2	Understanding
	• C3	Applying
	• C4	Analyzing
	• C5	Evaluating
	• C6	Creating
2.	P	Psychomotor Domain: motor skills.
	• P1	Imitation
	• P2	Manipulation
	• P3	Precision
	• P4	Articulation
	• P5	Naturalization
3.	A	Affective Domain: feelings, values, dispositions, attitudes, etc
	• A1	Receive
	• A2	Respond
	• A3	Value
	• A4	Organize
	• A5	Internalize

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

The large group interactive session is structured format of Prof Umar Model of Integrated lecture. It will be followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explain the underlying phenomena through questions, pictures, videos of patients, interviews and exercises, etc. Students are actively involved in the learning process.

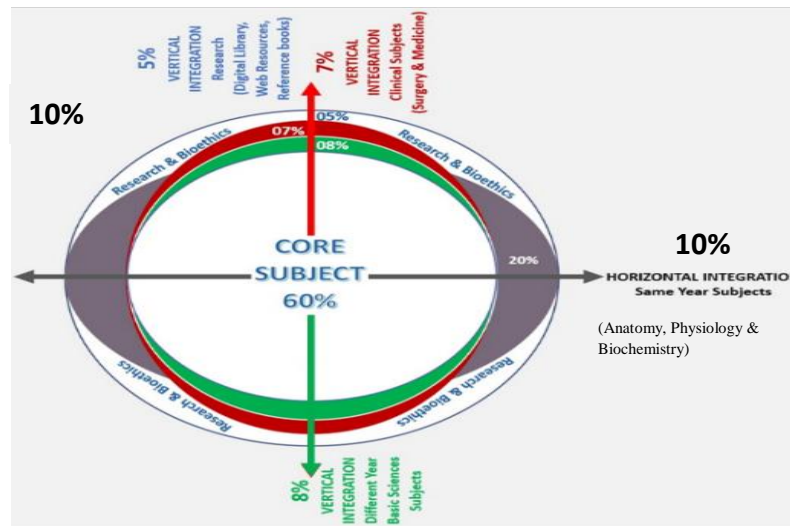


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

This format helps students to clarify concepts acquire skills and attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics or power point presentations. Students exchange opinions and apply knowledge gained from lectures, SGDs and self study. The facilitator role is to ask probing questions, summarize and help to clarify the concepts.

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementaion of Small Group Discussions

Step 1	Sharing of Learning objectives by using students Study guides	First 5 minutes
Step 2	Asking students pre-planned questions from previous teaching session to develop co-relation (these questions will be standardized)	5minutes
Step 3	Students divided into groups of three and allocation of learning objectives	5minutes
Step 4	ACTIVITY: Students will discuss the learning objectives among themselves	15 minutes
Step 5	Each group of students will present its learning objectives	20 min
Step 6	Discussion of learning content in the main group	30min
Step 7	Clarification of concept by the facilitator by asking structured questions from learning content	15 min
Step 8	Questions on core concepts	
Step 9	Questions on horizontal integration	
Step 10	Questions on vertical integration	
Step 11	Questions on related research article	
Step 12	Questions on related ethics content	
Step 13	Students Assessment on online MS teams (5 MCQs)	5 min
Step 14	Summarization of main points by the facilitator	5 min
Step 15	Students feedback on the SGD and entry into log book	5 min
Step 16	Ending remarks	

Self Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be defined
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:
 - i Will be online on LMS (Mid module/ end of Module)
 - ii.OSPE station

Case Based Learning (CBL)

- It's a learner centered model which engages students in discussion of specific scenarios that typically resemble real world examples.
- Case scenario will be given to the students
- Will engage students in discussion of specific scenarios that resemble or typically are real-world examples.
- Learning objectives will be given to the students and will be based on
 - i. To provide students with a relevant opportunity to see theory in practice
 - ii. Require students to analyze data in order to reach a conclusion.
 - iii. Develop analytic, communicative, and collaborative skills along with content knowledge.

Problem Based Learning (PBL)

- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.
- This problem is what drives the motivation and the learning.

The 7- Jump-Format of PBL (Masstricht Medical School)	
Step 7	Synthese & Report
Step 6	Collect Information from outside
Step 5	Generate learning Issues
Step 4	Discuss and Organise Ideas
Step 3	Brainstorming to Identify Explanations
Step 2	Define the Problem
Step 1	Clarify the Terms and Concepts of the Problem Scenario
	Problem- Scenario

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide	10-15 minutes
Practical work	25-30 minutes
Write/ draw and get it checked by teacher	20-25 minutes
05 mcqs at the end of the practical	10 minutes
At the end of module practical copy will be signed by head of department	
At the end of block the practical copy will be signed by	
Head of Department	
Dean	
Medical education department	
QEC	

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- Large Group Interactive Session:
 - Anatomy (LGIS)
 - Physiology (LGIS)
 - Biochemistry (LGIS)
- Small Group Discussions
 - Anatomy (SGD)
 - Physiology (SGD)
 - Biochemistry (SGD)
- Self Directed Topic, Learning Objectives & References
 - Anatomy (SDL)
 - Physiology (SDL)
 - Biochemistry (SDL)
- Skill Laboratory
 - Anatomy
 - Physiology
 - Biochemistry

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of session students should be able to	C/P/A	Teaching Strategy	Assessment Tool
Embryology				
Second week of Human Development (Formation of Bilaminar Embryonic Disc)	• Describe formation of Amniotic Cavity, embryonic disc and Umbilical vesicle	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Discuss development of chorionic sac	C1		
	• Outline the process of implantation	C1		
	• Describe changes in Gravid Endometrium	C1		
	• Understand the Bio-physiological aspects of gravid endometrium	C2		
	• Discuss clinical aspects of implantation	C3		
	• Able to read relevant research article	C3		
Gastrulation (Formation of three germ layers Establishment of Body Axis and Fate Map 3 rd week)	• Discuss process of gastrulation with special reference to primitive streak	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Describe the fate of primitive streak	C1		
	• Discuss establishment of body axis	C1		
	• Draw fate map and discuss its importance in future development	C1		
	• Understand the Biophysiological aspects of gastrulation	C2		
	• Describe congenital abnormalities associated with gastrulation	C3		
Notochord Formation (3 rd week)	• Define notochord	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Delineate different stages of notochord formation	C1		
	• Discuss the importance of notochord in development of central nervous system	C2		
	• Describe role of notochord in development of axial Skeleton	C1		
	• Describe the fate of notochord	C1		
	• Correlate clinical aspects of notochord formation	C3		
	• Able to read relevant research article	C3		

Neurulation (3 rd week)	• Define neurulation	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Describe formation of neural plate and neural tube	C1		
	• Discuss neural crest formation	C2		
	• Enlist derivatives of neural crest cells	C1		
	• Understand the bio-physiological aspects of Neurulation	C2		
	• Discuss neural tube defects	C3		
	• Discuss different types of spina bifida	C3		
	• Discuss the importance of folic acid in the prevention of spina bifida	C2		
Development and Differentiation of Somites	• Enumerate three germ layers and their derivatives	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Describe different divisions of mesoderm	C1		
	• Describe development of somites and their differentiation	C1		
	• Explain different stages of somite development	C1		
	• Understand the Biophysiological aspects of Somite differentiation	C2		
	• Correlate clinical aspects of somite differentiation	C3		
	• Able to read relevant research article	C3		
	• Know to use Digital Library	C3		
Early Development of Cardiovascular System & highlights of 4th- 8th week	• Describe early development of cardiovascular system and chorionic villi	C1	• LGIS	SAQs MCQs VIVA
	• Discuss development of intraembryonic coelom	C1		
	• Define angiogenesis and vasculogenesis.	C1		
	• Correlate clinical aspects of angiogenesis	C3		
	• Summarize the main developmental events and changes in external form of the embryo during the 4th to 8th weeks	C1		
Folding of Embryo	• Enlist different phases of embryonic development	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Describe folding of the embryo in median plane	C1		
	• Describe folding of the embryo in horizontal plane	C1		
	• Discuss results of folding	C1		
	• Discuss Omphalocele and Gastroschisis	C3		
Fetal period	• Describe different criteria for fetal age estimation	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Discuss the trimesters of pregnancy with their importance	C1		
	• Describe highlights of fetal period	C1		
	• Differentiate between embryonic and fetal period	C1		
	• Tabulate growth in length and weight during fetal period	C1		
	• Enumerate and discuss factors influencing fetal growth	C3		
	• Define the term perinatology	C1		
	• Enlist and briefly describe procedures for assessing fetal well-being	C3		

	<ul style="list-style-type: none"> Correlate clinical aspects of fetal period 	C3	• LGIS	VIVA VOCE
	<ul style="list-style-type: none"> Able to read relevant research article 	C3		
Placenta	<ul style="list-style-type: none"> Discuss Implantation and establishment of the embryo within the uterus 	C1	• LGIS	SAQs MCQs VIVA VOCE
	<ul style="list-style-type: none"> Describe the differentiation of the uterine lining into decidua 	C1		
	<ul style="list-style-type: none"> Describe the development of a placenta 	C1		
	<ul style="list-style-type: none"> Describe fetal – maternal circulation 	C1		
	<ul style="list-style-type: none"> Discuss the bio-physiological aspects of placenta 	C2		
	<ul style="list-style-type: none"> Discuss the clinical conditions associated with placenta 	C3		
Fetal Membranes and Multiple Pregnancies	<ul style="list-style-type: none"> Enlist membranes developing during pregnancy 	C1	• LGIS	SAQs MCQs VIVA VOCE
	<ul style="list-style-type: none"> Discuss origin, composition, location, function and fate of yolk sac 	C1		
	<ul style="list-style-type: none"> Explain origin, composition, location, function and fate of Amnion 	C1		
	<ul style="list-style-type: none"> Describe formation of umbilical cord and its structure 	C1		
	<ul style="list-style-type: none"> Define Allantois along with its importance and function 	C1		
	<ul style="list-style-type: none"> Correlate clinical aspects of fetal membranes 	C3		
	<ul style="list-style-type: none"> Able to read relevant research article 	C3		
	<ul style="list-style-type: none"> Discuss different types of twins 	C1		
	<ul style="list-style-type: none"> Describe the arrangement of fetal membranes in monozygotic and dizygotic twins 	C1		
	<ul style="list-style-type: none"> Discuss the clinical conditions of twin pregnancy 	C3		
Histology				
Connective tissue I Cells of connective tissue Embryonic connective tissue / mucoid Connective Tissue	<ul style="list-style-type: none"> Define connective tissue 	C1	• LGIS	SAQs MCQs VIVA VOCE
	<ul style="list-style-type: none"> Classify connective tissue 	C1		
	<ul style="list-style-type: none"> Enlist and explain types of cells in CT 	C1		
	<ul style="list-style-type: none"> Enumerate sites and describe the function of each type of cell of connective tissue 	C1		
	<ul style="list-style-type: none"> Understand the Biophysiological aspects of connective tissue 	C2		
	<ul style="list-style-type: none"> Draw and label histological structure of mucoid CT. 	C2		
	<ul style="list-style-type: none"> Describe fibers in mucoid CT 	C2		
	<ul style="list-style-type: none"> Correlate clinical aspects of CT 	C3		
	<ul style="list-style-type: none"> Able to read relevant research articles 	C3		
	<ul style="list-style-type: none"> Know to use Digital Library 	C3		
	<ul style="list-style-type: none"> Enumerate examples and location of reticular, connective tissue 	C1		
Connective tissue II Loose aerolar	<ul style="list-style-type: none"> Illustrate histological structure of loose and reticular connective tissue. 	C2		

connective tissue & its types Reticular CT	• Correlate clinical aspects of loose and reticular CT	C3	• LGIS	SAQs MCQs VIVA VOCE
	• Able to read relevant research article	C3		
	• Know to use Digital Library	C3		
Connective tissue III Adipose CT Dense regular and irregular connective	• Enumerate examples and location of adipose and dense CT.	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Draw, describe and label histological structure of all types of connective tissue.	C1		
	• Differentiate between dense regular and irregular connective tissue microscopically	C1		
	• Correlate clinical aspects of loose and reticular CT	C3		
	• Able to read relevant research article	C3		
	• Know to use Digital Library	C3		
Cartilage	• Classify cartilage	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Enlist sites of hyaline, fibro and elastic cartilage	C1		
	• Appreciate microscopic structure of Hyaline, Elastic and Fibrocartilage	C1		
	• Differentiate between three cartilages	C1		
	• Describe the structure of perichondrium	C1		
	• Describe the arrangement of layers in articular cartilage	C1		
	• Understand the Biophysiological aspects of cartilage	C2		
	• Correlate clinical aspects of three types of cartilage	C3		
	• Able to read relevant research article	C3		
• Know to use Digital Library	C3			
Bone-I	• Describe structure and functions of bone cells	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Discuss periosteum and endosteum	C1		
	• Discuss types of bones	C1		
	• Describe the histological features of spongy and compact bone	C1		
	• Describe structure of osteon.	C2		
	• Understand the Biophysiological aspects of bone	C1		
	• Correlate clinical aspects of bone	C3		
	• Able to read relevant research article	C3		
Bone-II	• Describe osteogenesis	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Discuss bone growth, remodeling and repair	C1		
	• Describe histological changes in bones in osteoporosis, rickets, osteomalacia, osteopetrosis and bone tumors	C3		

General Anatomy				
Bone-I	• Describe the functions of bone and skeleton	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Identify general features of bone	C1		
	• Differentiate between maceration and decalcification of bones	C1		
	• Correlate clinical aspects of bone	C3		
	• Able to read relevant research article	C3		
Bone-II	• Classify bones based on different criteria	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Describe the growing end hypothesis	C1		
	• Describe blood supply of bones	C1		
	• Appreciate role of bones in estimation of sex, age and stature.	C2		
Joints-I	• Define joints	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Classify fibrous joints with examples	C1		
	• Classify cartilaginous joints with examples	C1		
	• Classify synovial joints with examples	C1		
	• Understand the Bio-physiological aspects of joints	C2		
Joints-II	• Describe structure of synovial joint	C1	• LGIS	SAQs MCQs VIVA VOCE
	• Classify synovial joints	C1		
	• Explain movements around synovial joints	C1		
	• Enlist Degenerative joint diseases	C3		
	• Describe the involvement of anatomical structure of the articular cartilage in Degenerative joint disease	C3		

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of session students should be able to	C/P/A	Teaching Strategy	Assessment Tool
Structure of Neuron	<ul style="list-style-type: none"> Describe different parts of neuron 	C1	LGIS SDL	SAQs MCQs VIVA VOCE
Classification of Neurons and nerve fibres, NGF	<ul style="list-style-type: none"> Describe the classification of neurons and nerve fibres 	C1	LGIS SDL	SAQs MCQs VIVA VOCE
	<ul style="list-style-type: none"> Describe NGF; given their roles 	C1		
Stimulus and Response & Types of Stimuli	<ul style="list-style-type: none"> Define stimulus 	C1	LGIS	SAQs MCQs VIVA VOCE
	<ul style="list-style-type: none"> Describe various types of stimuli and response 	C1		
Concept of degeneration and regeneration	<ul style="list-style-type: none"> Explain degeneration and regeneration of nerve fibres 	C2	LGIS	SAQs MCQs VIVA VOCE
Properties of nerve fibres	<ul style="list-style-type: none"> Discuss the properties of nerve fibres 	C2	LGIS	SAQs MCQs VIVA VOCE
Graded Potential, Comparison with action potential	<ul style="list-style-type: none"> Define graded Potential with examples 	C1	LGIS	SAQs MCQs VIVA VOCE
	<ul style="list-style-type: none"> Compare between graded potential and action potential 	C2		
Nernst Potential RMP	<ul style="list-style-type: none"> Understand the concept of Nernst potential and equilibrium potential for different ions 	C2	LGIS SDL	SAQs MCQs VIVA VOCE
	<ul style="list-style-type: none"> Define resting membrane potential of nerves. 	C1		
	<ul style="list-style-type: none"> Explain the factors which determine the level of RMP 	C2		
	<ul style="list-style-type: none"> Differences between electrical and chemical synapse 	C2		
RMP: & Measurement & effect of Electrolytes,	<ul style="list-style-type: none"> Describe the terms polarized and hyperpolarized 	C1	LGIS	SAQs MCQs VIVA
	<ul style="list-style-type: none"> Describe the role of various ions for these states 	C1		

				VOCE
Stages of Action Potential I&II	• Define and draw action potential	C1	LGIS	SAQs MCQs VIVA VOCE
	• Describe different phases of action potential	C1		
Recording of Action Potential Propagation of Action Potential & Factors effecting nerve conduction Polarization and hyperpolarization state	• Briefly describe the method of recording resting membrane potential and action potential	C1	LGIS	SAQs MCQs VIVA VOCE
	• Describe the mechanism of propagation of action potential	C1		
	• Describe various factor that effect nerve conduction	C1		
Refractory Period, Different types of Action Potentials	• Define refractory period and discuss its types	C1	LGIS SDL	SAQs MCQs VIVA VOCE
	• Describe various types of action potential	C1		
Synapse and synaptic transmission	• Describe synapse and its types	C1	LGIS	SAQs MCQs VIVA VOCE
EPSP, IPSP, Properties of chemical synapse	• Discuss in detail various properties of chemical synapse	C2	LGIS	SAQs MCQs VIVA VOCE
Properties of Chemical synaptic	• Discuss in detail various properties of chemical synapse	C2	LGIS	SAQs MCQs VIVA VOCE
NMJ , Synthesis and release of Ach Excitation-Contraction coupling	• Describe the physiologic anatomy of neuromuscular junction.	C1	LGIS SDL	SAQs MCQs VIVA VOCE
	• Recall Synthesis and release of Ach	C1		
	• Describe the mechanism of transmission of impulses from nerve endings to skeletal muscle fibers	C1		
	• Describe briefly the biochemistry of acetyl choline	C1		
Drugs acting on	• Enlist drugs that enhance and block transmission at neuromuscular junction	C1	LGIS SDL	SAQs MCQs

NMJ,Excitation- Contraction coupling	<ul style="list-style-type: none"> Describe mechanism of excitation contraction coupling 	C1		VIVA VOCE
Myasthenia Gravis, Lambert Eaton Syndrome	<ul style="list-style-type: none"> Describe the salient features of myasthenia gravis and Lambert Eaton syndrome 	C1	LGIS	SAQs MCQs VIVA VOCE

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Minerals & Vitamins				
Minerals & Vitamins Introduction Calcium	<ul style="list-style-type: none"> State Daily Requirements of Calcium in different conditions: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 63 	C1	LGIS	MCQs, SAQs & Viva
	<ul style="list-style-type: none"> Classify Minerals: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2, Chapter#6, Page 56 Discuss Types & Sources of Calcium: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 63 	C2		
Biochemical Role Of Calcium & Phosphate	<ul style="list-style-type: none"> Discuss causes of Hypercalcemia & Hypocalcemia: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 69, 70 	C2	LGIS	MCQs, SAQs & Viva
	<ul style="list-style-type: none"> Describe effects of Hypercalcemia & Hypocalcemia: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 69, 70 	C2		
	<ul style="list-style-type: none"> State Daily Requirements of Phosphate: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 70,78 	C1		
	<ul style="list-style-type: none"> Discuss Biochemical functions of Phosphate: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 72 	C2		

Fluoride, Magnesium, Sulphur	<ul style="list-style-type: none"> Elaborate Biochemical functions of Fluoride, Sulphur & Magnesium: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 76, 77 Enlist Sources of Fluoride, Sulphur & Magnesium: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 76, 77 Describe Deficiency Effects: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 76, 77 	C2	LGIS	MCQs, SAQs & Viva				
Iodine, Copper, Zinc, Selenium, Manganese	<ul style="list-style-type: none"> Recall sources & daily requirements: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 73, 74,75,78 Discuss their biochemical functions: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 73,74,75,78 Describe Deficiency Effects: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 73,74,75,78 	C1			LGIS	MCQs, SAQs & Viva		
Vitamins & Their Classification	<ul style="list-style-type: none"> Classify Fat & Water Soluble Vitamins: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#1 , Page 1 Enlist Sources of Vitamin A & E: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 3, 17 Describe Biochemical functions of Vitamin A & E: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 4, Page 19 Describe Deficiency Effects of Vitamin A & E: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 6, Page 7, Page 18 Explain Toxic Effects of Vitamin A: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 6 & 7 	C2	LGIS	MCQs, SAQs & Viva				
		C1					LGIS	MCQs, SAQs & Viva
		C2			LGIS	MCQs, SAQs & Viva		
		C2							LGIS	MCQs, SAQs & Viva
		C2	LGIS	MCQs, SAQs & Viva				

Vitamin D	<ul style="list-style-type: none"> • Enlist Sources of Vit.D: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 10 • Explain Steps of activation of Vit.D in the body: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page11 • Describe Biochemical functions of Vit.D: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 13 • Explain Deficiency effects of Vit.D: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 14,15,16 • Explain Toxic effects of Vit.D: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 ,Page 17 	C1 C2 C2 C2	LGIS	MCQs, SAQs & Viva
Vitamin C	<ul style="list-style-type: none"> • Enlist Sources of Vit.C: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 , Page 24 • Describe Biochemical functions of Vit.C: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2,Chapter#3 , Page 25 • Explain Deficiency effects of Vit.C: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 , Page 26 • Explain Toxic effects of Vit.C: Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 ,Page 26, 27 	C1 C2 C2 C2	LGIS	MCQs, SAQs & Viva
Niacin & Thiamine	<ul style="list-style-type: none"> • Enlist Sources : Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 , Page 28,29,33,34 • Describe Biochemical functions : Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2,Chapter#3 , Page 28,29,33,34 • Explain Deficiency effects : Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 , Page 28,29,33,34 	C1 C2 C2	LGIS	MCQs, SAQs & Viva

Classification & Structure Of Amino Acids	<ul style="list-style-type: none">Classification & Structure Of Amino Acids & Isomerism of Amino Acids Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#1, Page 1-5	C2	LGIS	MCQs, SAQs & Viva
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Anatomy Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of Session students should be able to	C/P/A	Teaching Strategy	Assessment Tool
Shoulder Joint	• Classify the joint (according to type, shape and movement)	C1	SGD, Skill Lab	MCQs SEQs VIVA VOCE OSPE
	• Discuss the attachments of capsule and ligament	C1		
	• Enlist the intra-articular structure (tendon of biceps brachii)	C1		
	• Describe attachment of glenoidal labrum with its significance in relation to synovial membrane	C1		
	• Discuss the neurovascular supply	C1		
	• Discuss factors indispensable for stability of joint	C1		
	• Discuss the movements at shoulder joint	C1		
	• Enlist related bursae.	C1		
Flexor compartment & Neurovascular organization of the arm	• Explain the related clinicals (shoulder dislocation, rotator cuff injuries, Glenoid Labrum tears, Frozen shoulder)	C3	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Tabulate muscles of flexor compartment with their origin, insertion, nerve supply and actions	C1		
	• Describe Neurovascular organization of arm, • Explain the related clinicals (biceps tendinitis, dislocation of tendon of biceps brachii)	C1 C3		
Extensor compartment of the arm	• Tabulate Muscles of extensor compartment with origin insertion, nerve supply and actions	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Describe the neurovascular organization	C1		
	• Discuss consequences of injury to radial nerve (wrist drop), venipuncture in cubital fossa)	C3		
	• Read relevant research article	C3		
	• Use Digital Library	C3		
Ulna	• Determine the side	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Demonstrate anatomical position	P		
	• Discuss general features, attachments and articulations	C1		
	• Describe ossification	C1		
	• Elaborate interosseous membrane and its importance	C1		
	• Correlate the clinical aspects	C3		

Radius	• Determine the side	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Demonstrate its anatomical position	P		
	• Discuss general features, attachments and articulations	C1		
	• Describe its ossification	C1		
	• Describe the interosseous membrane and its importance	C1		
	• Correlate the clinical aspects	C3		
Flexor compartment of the forearm	• Tabulate muscles of flexor compartment with their origin, insertion, nerve supply and actions	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Describe clinical conditions associated with flexor compartment	C3		
Extensor compartment of the forearm	• Tabulate muscles of extensor compartment with origin, insertion, nerve supply and actions	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Describe clinical conditions associated with extensor compartment of forearm (Tennis elbow)	C3		
Neurovascular organization of forearm	• Describe nerves and vessels of forearm (formation, commencement, course, branches and relations)	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Describe associated clinical conditions (Median nerve injury, pronator syndrome, cubital tunnel syndrome)	C3		
	• Read relevant research article	C3		
	• Use Digital Library	C3		
Elbow joint	• Describe the type of joint with its articular surfaces	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Discuss the capsule, synovial membrane and ligaments of the joints	C1		
	• Enumerate the related bursae,	C1		
	• Describe axis and plane of movements	C1		
	• Enumerate muscles producing movements at elbow joint.	C1		
	• Describe the associated clinical conditions (Elbow joint dislocation and student's elbow)	C3		
Proximal and distal radioulnar joints	• Describe type of radioulnar joints, articular surfaces, capsular attachments, synovial membrane and ligaments.	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Describe movements of supination and pronation with special reference to axes	C1		
	• Enumerate the muscles producing these movements	C1		
	• Correlate clinical aspects of joint	C3		

Hand	• Understand the arrangement of carpal bones	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Identify the salient features of carpal bone.	C1		
	• Discuss the special blood supply of scaphoid bone.	C3		
	• Describe the mid carpal joint.	C1		
	• Discuss the 1st carpometacarpal joint including the type of the joint capsule synovial membrane and ligaments with axis of the movement and the muscles producing the movements	C1		
	• Read relevant research article	C3		
	• Use Digital Library	C3		
Wrist joint	• Describe the type of joint with its articular surfaces	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Discuss the capsule, synovial membrane and ligaments of the joint	C1		
	• Enumerate the related bursae	C1		
	• Describe axis and plane of movements	C1		
	• Enumerate muscles producing movements at joint	C1		
	• Discuss wrist fractures & Dislocations	C3		
Anastomosis around wrist joint	• Discuss the blood vessels involved in the formation of anastomosis around the wrist joint	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Explain the importance of anastomosis.	C1		
Dorsum of Hand, Flexor retinaculum Extensor retinaculum	• Describe the muscles of dorsum of hand	C1	SGD, SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Discuss the Dorsal digital expansion	C1		
	• Describe the attachment of flexor retinaculum with structures related to it.	C1		
	• Describe the Guyon's canal.	C1		
	• Describe the formation of the carpal tunnel and its applied anatomy.	C3		
	• Describe the attachment of extensor retinaculum and its various compartments with structures passing through it.	C1		
	• Discuss the De Quervain's disease.	C3		
Palm of hand-I Muscles & Neurovascular organization	• Tabulate the muscles forming the thenar and hypothenar eminence.	C1	SKILL LAB	MCQs SEQs VIVA VOCE OSPE
	• Discuss Lumbricals, Palmar and dorsal interossei with their attachments and actions.	C1		
	• Discuss the formation of superficial and deep arterial arches	C1		
	• Discuss the clinicals associated with palm	C3		
Palm of hand-II Fascial	• Discuss the formation and attachments of palmar aponeurosis.	C1	SKILL LAB	MCQs
	• Describe the formation of palmar spaces and its divisions	C1		
	• Describe the thenar and mid palmar spaces.	C1		
	• Define pulp spaces	C1		

spaces of hand Grip	• Relate anatomy of pulp space with its common clinical conditions	C3		SEQs VIVA VOCE OSPE
	• Describe dorsal subcutaneous spaces.	C1		
	• Demonstrate surgical incisions.	C3		
	• Describe different types of grips	C1		
	• Read relevant research article	C3		
	• Use Digital Library	C3		
Radiology & Surface Anatomy of upper limb	<ul style="list-style-type: none"> • Demonstrate the surface anatomy of <ul style="list-style-type: none"> ○ Subcalvian artery, ○ Subclavian vein, ○ Axillary artery, ○ Brachial artery, ○ Median nerve, ○ Radial artery, ○ Ulnar artery, ○ Radial nerve, ulnar nerve and ○ Superficial and deep palmar arches • Demonstrate major landmarks of upper limb on radiographs 	P	SKILL LAB	MCQs SEQs VIVA VOCE OSPE

Physiology Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of Session students should be able to	C/P/A	Teaching Strategy	Assessment Tool
Discussion regarding previous module	<ul style="list-style-type: none"> • Discuss difficulties regarding questions, MCQs of Foundation Module 	C2	SGD	MCQs SAQs Viva Voce OSPE
RMP, measurement & effects, of electrolyte on RMP	<ul style="list-style-type: none"> • Define resting membrane potential of nerves. 	C1	SGD	MCQs SAQs Viva Voce OSPE
	<ul style="list-style-type: none"> • Explain the factors which determine the level of RMP 	C2		
Drugs acting on NMJ excitation contraction coupling	<ul style="list-style-type: none"> • Drugs acting on NMJ 	C1	SGD	MCQs SEQs SAQs Viva Voce OSPE
	<ul style="list-style-type: none"> • Excitation contraction coupling 	C1		
Synapse and synaptic transmission &	<ul style="list-style-type: none"> • Describe synapse and its types 	C1		MCQs SAQs
	<ul style="list-style-type: none"> • Differences between electrical and chemical synapse 			

EBSIP,IPSP properties of chemical synapse		C2	SGD	Viva Voce OSPE
Nernst potential	• Concept of Nernst potential	C1	SGD	MCQs SAQs Viva Voce OSPE
	• Equilibrium potential for different ions	C2		
Neuro muscular junction(NMJ)	• Transmission Across NMJ	C1	SGD	MCQs SAQs Viva Voce OSPE
	• Diseases of NMJ	C2		
Nerve growth factor (NGF)	• Describe NGF	C1	SGD	MCQs SAQs Viva Voce OSPE
	• Give their role	C1		
	• Explain De-generation and Re-Generation of nerve fibers	C2		

Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives	Learning Domain	Teaching Strategy	Assessment Tools
Minerals & Vitamins Introduction Vitamin A & Vitamin E	• Define Minerals • Define Vitamins	C1	SGD	MCQ SAQ VIVA
	• Introduction & Classification of Minerals • Discuss sources, functions and clinical significance of vitamin A, vitamin E.	C2		
Vitamin C & Vitamin D Minerals	• Discuss sources, functions and clinical significance of vitamin C, vitamin D.	C2	SGD	MCQ SAQ VIVA
	• Discuss Sources, Functions And Clinical Significance Calcium, Phosphate, Iodine, Fluoride, Copper, Zinc, Selenium, Magnesium, Sulphur And Cobalt.	C2		

Topic, Learning Objectives & Resources

Anatomy Self Directed Learning (SDL)

Topic	Learning Objectives At the end of Session students should be able to	Learning Resources
Shoulder Joint	• Classify the joint (according to type, shape and movement)	<ul style="list-style-type: none"> • Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page 266- 271,284-285).
	• Discuss the attachments of capsule and ligament	
	• Enlist the intra-articular structure (tendon of biceps brachii)	
	• Describe attachment of glenoidal labrum with its significance in relation to synovial membrane	
	• Discuss the neurovascular supply	
	• Discuss factors indispensable for stability of joint	
	• Discuss the movements at shoulder joint	
	• Enlist related bursae.	
	• Explain the related clinicals (shoulder dislocation, rotator cuff injuries, Glenoid Labrum tears, Frozen shoulder)	
Flexor compartment & Neurovascular organization of the arm	• Tabulate muscles of flexor compartment with their origin, insertion, nerve supply and actions	<ul style="list-style-type: none"> • Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page201-211,211-214).
	• Describe Neurovascular organization of arm,	
	• Explain the related clinicals (biceps tendinitis, dislocation of tendon of biceps brachii)	
Extensor compartment of the arm	• Tabulate Muscles of extensor compartment with origin insertion, nerve supply and actions	<ul style="list-style-type: none"> • Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page201-211,211-214).
	• Describe the neurovascular organization	
	• Discuss consequences of injury to radial nerve (wrist drop), venipuncture in cubital fossa)	
	• Read relevant research article	
	• Use Digital Library	
Ulna	• Determine the side	<ul style="list-style-type: none"> • Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page147).
	• Demonstrate anatomical position	
	• Discuss general features, attachments and articulations	
	• Describe ossification	
	• Elaborate interosseous membrane and its importance	
• Correlate the clinical aspects		

Radius	• Determine the side	• Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 3, Page148).
	• Demonstrate its anatomical position	
	• Discuss general features, attachments and articulations	
	• Describe its ossification	
	• Describe the interosseous membrane and its importance	
	• Correlate the clinical aspects	
Flexor compartment of the forearm	• Tabulate muscles of flexor compartment with their origin, insertion, nerve supply and actions	• Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 3, Page215-234,236,240).
	• Describe clinical conditions associated with flexor compartment	
Extensor compartment of the forearm	• Tabulate muscles of extensor compartment with origin, insertion, nerve supply and actions	• Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 3, Page215-234,236,240).
	• Describe clinical conditions associated with extensor compartment of forearm (Tennis elbow)	
Neurovascular organization of forearm	• Describe nerves and vessels of forearm (formation, commencement, course, branches and relations)	• Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 3, Page215-234,236,240).
	• Describe associated clinical conditions (Median nerve injury, pronator syndrome, cubital tunnel syndrome)	
	• Read relevant research article	
	• Use Digital Library	
Elbow joint	• Describe the type of joint with its articular surfaces	• Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition (Chapter 3, Page271-274).
	• Discuss the capsule, synovial membrane and ligaments of the joints	
	• Enumerate the related bursae,	
	• Describe axis and plane of movements	
	• Enumerate muscles producing movements at elbow joint.	
	• Describe the associated clinical conditions (Elbow joint dislocation and student's elbow)	
Proximal and distal radioulnar joints	• Describe type of radioulnar joints, articular surfaces, capsular attachments, synovial membrane and ligaments.	• Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 3, Page274-277).
	• Describe movements of supination and pronation with special reference to axes	
	• Enumerate the muscles producing these movements	
	• Correlate clinical aspects of joint	
Hand	• Understand the arrangement of carpal bones	• Clinical Oriented Anatomy by
	• Identify the salient features of carpal bone.	
	• Discuss the special blood supply of scaphoid bone.	

	<ul style="list-style-type: none"> • Describe the mid carpal joint. • Discuss the 1st carpometacarpal joint including the type of the joint capsule synovial membrane and ligaments with axis of the movement and the muscles producing the movements • Read relevant research article • Use Digital Library 	Keith L. Moore.8TH Edition. Chapter 3, Page148-151,278-283).
Wrist joint	<ul style="list-style-type: none"> • Describe the type of joint with its articular surfaces • Discuss the capsule, synovial membrane and ligaments of the joint • Enumerate the related bursae • Describe axis and plane of movements • Enumerate muscles producing movements at joint • Discuss wrist fractures & Dislocations 	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page278).
Anastomosis around wrist joint	<ul style="list-style-type: none"> • Discuss the blood vessels involved in the formation of anastomosis around the wrist joint • Explain the importance of anastomosis. 	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page278).
Dorsum of Hand, Flexor retinaculum Extensor retinaculum	<ul style="list-style-type: none"> • Describe the muscles of dorsum of hand • Discuss the Dorsal digital expansion • Describe the attachment of flexor retinaculum with structures related to it. • Describe the Guyon's canal. • Describe the formation of the carpal tunnel and its applied anatomy. • Describe the attachment of extensor retinaculum and its various compartments with structures passing through it. • Discuss the De Quervain's disease. 	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page159,224-226).
Palm of hand-I Muscles & Neurovascular organization	<ul style="list-style-type: none"> • Tabulate the muscles forming the thenar and hypothenar eminence. • Discuss Lumbricals, Palmar and dorsal interossei with their attachments and actions. • Discuss the formation of superficial and deep arterial arches • Discuss the clinicals associated with palm 	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page243-256).
Palm of hand-II Fascial spaces of hand Grip	<ul style="list-style-type: none"> • Discuss the formation and attachments of palmar aponeurosis. • Describe the formation of palmar spaces and its divisions • Describe the thenar and mid palmar spaces. • Define pulp spaces • Relate anatomy of pulp space with its common clinical conditions • Describe dorsal subcutaneous spaces. • Demonstrate surgical incisions. • Describe different types of grips • Read relevant research article • Use Digital Library 	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page241-243,258-262).

Physiology Self Directed Learning (SDL)

Topics	Learning Objective	References
Structure of neurons Classification of neurons & nerve fibers	<ul style="list-style-type: none"> • Structure of neurons • Myelinated and unmyelinated nerve fibers. • Neuroglia • Difference between neurons and glial cells 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition physiology Excitable Tissue; Nerve (Chapter04 ,Page 85-90) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Introduction to Physiology. (Unit 2,Chapter 05 Membrane Physiology Page 74) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 01. Physiology ofBody Fluids. (Chapter 03,Page 37)
Nernst potential, RMP	<ul style="list-style-type: none"> • Basic physics of membrane potential, Nernst equation, • Goldman Equation • Origin of RMP in different cell types. 	<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Chapter no. 05 Mmembrane dynamicsPage no. 188) • Textbook of Medical Physiology by Guyton & Hall.14th Edition Membrane Potential and actionpotential. (Unit 2, Chapter 05 Page 63) • Ganong's Review of Medical Physiology.25TH Edition, Excitable Tissue; Nerve (Chapter 04,Page 90) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 01. Propertie andfunction of cell membrane. (Chapter 02,Page 31, 41-43)
Properties of nerve fibers	<ul style="list-style-type: none"> • Rhythmicity of Excitable tissues, • Characteristics of signal transmission, • Types of refractory period • Concept of excitation 	<ul style="list-style-type: none"> • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Membrane Potential and actionpotential (Unit 2, Chapter 05,Page 73-76) • Ganong's Review of Medical Physiology.25TH Edition, Overview of cell physiology in medicalphysiology. Excitable Tissue; Nerve (Chapter 04,Page 94) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 01. Propertie andfunction of cell membrane. (Chapter 03,Page 41, 55)
Measurement of RMP & effect of electrolytes on RMP	<ul style="list-style-type: none"> • Measurement of RMP • Effect of electrolytes on RMP • Role of Na/K pump 	<ul style="list-style-type: none"> • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Membrane Potential and actionpotential (Unit 2, Chapter 05 ,Page 65,67-70) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Chapter no. 05 Membrane dynamicsPage no. 188-194) • Physiology by Linda S. Costanzo 6thEdition. cellular Physiology (Chapter 01. Page 18)
Concept of degeneration & regeneration	<ul style="list-style-type: none"> • Introduction • Axonal Degeneration • Wallerian Degeneration 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition, overview of cell physiology in medical physiology (chapter 6, page 133) • A & P Anatomy and physiology Tortora, Chapter 12 Nervous tissue And Homeostasis Page 447 • Ganong's Review of Medical Physiology.25TH Edition, overview of cell physiology in medical physiology (Chapter 4, page 97)

Stimulus & response & types of stimuli, Stages of action potential	<ul style="list-style-type: none"> • Neuron action potential, • Stages of Propagation of AP • Conduction Rates • ALL-OR-NONE Principle 	<ul style="list-style-type: none"> • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Introduction to Physiology. (Unit 2, Chapter 05 Membrane Potential and action potential Page 71) • Ganong’s Review of Medical Physiology.25TH Edition, Excitable Tissue; Nerve (Chapter 04,Page 93) • Physiology by Linda S. Costanzo 6thEdition. cellular Physiology (Chapter 01. Page 25) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. Section 01. Properties and function of cell membrane. (Chapter 03,Page 45,47-51)
A, Refractory period, types of action potential. Graded potential comparison with action potential B. Recording & propagation of action potential & factors effecting nerve conduction & hyperpolarized state	<ul style="list-style-type: none"> • Threshold Potential • Action potential • Types of Action Potential • Propagation of Action Potential • Hyperpolarization • Factors effecting Action potential 	<ul style="list-style-type: none"> • A. • Ganong’s Review of Medical Physiology.25TH Edition, General principles and Energy production in Medical Physiology (chapter 04, Page 90, 93) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Introduction to Physiology. (Chapter 5, page 67). • Ganong’s Review of Medical Physiology.25TH Edition, General principles and Energy production in Medical Physiology (chapter 8, page 273) • B. • Ganong’s Review of Medical Physiology.25TH Editions, Overview of Cellular Physiology in Medical Physiology (chapter 08, Page 276, 278, 281) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Introduction to Physiology. (Section 1, chapter 04. , page 71,72.73,74) • Ganong’s Review of Medical Physiology.25TH Editions, Overview of Cellular Physiology in Medical Physiology (chapter 04, page 93)

Biochemistry Self Directed Learning (SDL)

Topics	Learning Objective	References
Minerals & Vitamins		
Minerals Introduction & Calcium	<ul style="list-style-type: none"> • State Daily Requirements of Calcium in different conditions 	<ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 63 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2, Chapter#6, Page 56 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 63
	<ul style="list-style-type: none"> • Classify Minerals Discuss Types • Sources of Calcium 	

Biochemical Role Of Calcium & Phosphate	<ul style="list-style-type: none"> • Discuss causes of Hypercalcemia • Discuss causes of Hypocalcemia • Describe effects of Hypercalcemia & Hypocalcemia • State Daily Requirements of Phosphate • Discuss Biochemical functions of Phosphate 	<ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 69, 70 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 69, 70 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 70,78 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 72
Fluoride, Magnesium, Sulphur	<ul style="list-style-type: none"> • Elaborate Biochemical functions of Fluoride, Sulphur & Magnesium • Enlist Sources of Fluoride, Sulphur. • Magnesium Describe Deficiency Effects 	<ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 76, 77 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 76, 77 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 76, 77
Iodine, Copper, Zinc, Selenium, Manganese	<ul style="list-style-type: none"> • Recall sources & daily requirements • Discuss their biochemical functions • Describe Deficiency Effects 	<ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 73, 74,75,78 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 73,74,75,78 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#6 , Page 73,74,75,78
Vitamins & Their Classification	<ul style="list-style-type: none"> • Classify Fat- & Water-Soluble Vitamins • Enlist Sources of Vitamin A & E • Describe Biochemical functions of Vitamin A & E • Describe Deficiency Effects of Vitamin A & E • Explain Toxic Effects of Vitamin A 	<ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#1 , Page 1 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 3, 17 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 4, Page 19 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 6, Page 7, Page 18 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 6 & 7
Vitamin D	<ul style="list-style-type: none"> • Enlist Sources of Vit.D • Explain Steps of activation of Vit.D in the body • Describe Biochemical functions of Vit.D • Explain Deficiency effects of Vit.D 	<ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 10 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page11 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 ,

	<ul style="list-style-type: none"> • Explain Toxic effects of Vit.D 	<p>Page 13</p> <ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 , Page 14,15,16 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#2 ,Page 17
Vitamin C	<ul style="list-style-type: none"> • Enlist Sources of Vit.C • Describe Biochemical functions of Vit.C • Explain Deficiency effects of Vit.C • Explain Toxic effects of Vit.C 	<ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 , Page 24 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2,Chapter#3 , Page 25 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 , Page 26 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 ,Page 26, 27
Niacin & Thiamine	<ul style="list-style-type: none"> • Enlist Sources • Describe Biochemical functions • Explain Deficiency effects 	<ul style="list-style-type: none"> • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 , Page 28,29,33,34 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2,Chapter#3 , Page 28,29,33,34 • Essentials of Medical Biochemistry Book By Mushtaq Ahmed Edition 9th Volume#2 ,Chapter#3 , Page 28,29,33,34
Classification & Structure Of Amino Acids	<ul style="list-style-type: none"> • Classification & Structure Of Amino Acids & Isomerism of Amino Acids 	<ul style="list-style-type: none"> • Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#1, Page 1-5

Histology Practicals Skill Laboratory (SKL)

Topic	At The End Of The Practical The Students Should Be Able To	C/P/A	Teaching Strategy	Assessment Tools
<u>Connective Tissue-I</u> <ul style="list-style-type: none"> • Embryonic connective tissue / mucoid Connective Tissue • Loose areolar connective tissue • Reticular Connective Tissue • Adipose Connective Tissue 	• Identify mucoid connective tissue under microscope	P	Skill Lab	OSPE MCQs
	• Illustrate histological structure of mucoid connective tissue	C2		
	• Write two points of identification	C1		
	• Identify reticular and adipose connective tissue under microscope	C2		
	• Illustrate histological structure of reticular and adipose connective tissue	C2		
	• Write two points of identification	C1		
• Focus the slide	P			
<u>Connective Tissue-II</u> <ul style="list-style-type: none"> • Dense regular connective tissue • Dense irregular connective tissue 	• Identify dense regular and irregular connective tissue under microscope	P	Skill Lab	OSPE MCQs
	• Illustrate histological structure of dense regular and irregular connective tissue	C2		
	• Write two points of identification	C1		
	• Differentiate between dense regular and irregular connective tissue microscopically	C2		
	• Focus the slide	P		
<u>CARTILAGE</u> <ul style="list-style-type: none"> • Hyaline cartilage • Elastic cartilage • Fibrocartilage 	• Identify all three types of cartilages under microscope	P	Skill Lab	OSPE MCQs
	• Illustrate microscopic structure of all three cartilages	C2		
	• Discuss the structure of perichondrium	C1		
	• Write two points of identification	C1		
	• Enlist sites of hyaline, fibro and elastic cartilage	C1		
	• Focus the slide	P		
<u>BONE</u> <ul style="list-style-type: none"> • Compact Bone • Spongy Bone 	• Identify compact and spongy bone under microscope	P	Skill Lab	OSPE MCQs
	• Illustrate microscopic structure of compact bone and spongy bone	C2		
	• Write two points of identification	C1		
	• Focus the slide	P		

Physiology Practicals Skill Laboratory (SKL)

Topic	At the end of practical students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Estimation of hemoglobin Practical I	<ul style="list-style-type: none"> • Apparatus identification • Detail procedure • Precautions • Aseptic measures taken during blood sampling 	P, A	Skill lab	OSPE
Estimation of hematocrit Practical I	<ul style="list-style-type: none"> • Hct definition • How to measure • Precautions 	P, A	Skill lab	OSPE
ESR Practical I	<ul style="list-style-type: none"> • Procedure • Precautions • Clinical importance of ESR, normal values 	P, A	Skill lab	OSPE
Preparation of DLC	<ul style="list-style-type: none"> • Preparation of slide – practice • How to make blood film • How to stain it after preparation • Help of teaching aid identification of cells 	P, A	Skill lab	OSPE

Biochemistry Practicals Skill Laboratory (SKL)

Topic	At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Color test for detection of amino acids	• Biuret test	P	Skill Lab	OSPE
	• Ninhydein Test			
Color test for detection of amino acids	• Xanthoprotic Test	P	Skill Lab	OSPE
	• Million- Nasse's Test			
	• Tryptophan by Aldehyde Test			
Color test for detection of amino acids	• Arginine by Sakaguchi's Test	P	Skill Lab	OSPE
	• Cystein by lead sulphide Test			
Quantitative Analysis	<ul style="list-style-type: none"> • Serum calcium • Serum Ascorbic Acid 	P	Skill Lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**
- **Longitudinal Themes**
 - **Biomedical Ethics & Professionalism**
 - **Family Medicine**
 - **Artificial Intelligence (Innovation)**
 - **Integrated Undergraduate Research Curriculum (IUGRC)**

Basic And Clinical Sciences (Vertical Integration)

Case Based Learning (CBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
Anatomy	• Shoulder Dislocation	Apply basic knowledge of subject to study clinical case.	C1
	• Wrist Drop	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Parasthesia	Apply basic knowledge of subject to study clinical case.	C3
	• Insecticide poisoning	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Night Blindness	Apply basic knowledge of subject to study clinical case.	C3
	• Rickets	Apply basic knowledge of subject to study clinical case.	C3

Large Group Interactive Sessions (LGIS)

Family Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Approach to a Patient with body aches	• Describe presenting complains of patients with body aches	C3	LGIS-1	MCQs
	• Discuss complications of body aches			
	• Describe initial treatment of patients with body aches			
	• Know when to refer patient to consultant/ Hospital			

Community Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Accidents	At the end of session students will be able to 1. Categorize different types of accidents	C2		
	2. Describe risk factors involved in accidents	C2		

	3. Participate in activities/programs for prevention and control of accidents	C2	LGIS	MCQs
	4. Describe steps involved in prevention of different types of accidents.	C2		

Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Osteoporosis	• Enlist causes Osteoporosis	C2	LGIS	MCQs
	• Discuss changes in bones in Osteoporosis	C2		
	• Describe clinical features	C2		
	• Enlist investigation	C3		
	• Discuss management	C2		
Polyarthritis	• Differentiate different causes of polyarthritis on basis of clinical features	C2	LGIS	MCQs
	• Discuss the diagnostic criteria of rheumatoid arthritis	C2		
	• Discuss the diagnostic criteria of SLE	C2		
	• Plan investigations of a patient with polyarthritis to find out aetiology	C3		
	• Discuss general and specific management of a patient with polyarthritis	C2		
Osteomalacia /rickets	• Enlist causes of rickets	C1	LGIS	MCQs
	• Discuss changes in bones in osteomalacia	C2		
	• Describe clinical features of osteomalacia & rickets	C2		
	• Enlist investigations for of osteomalacia & rickets	C1		
	• Discuss management of osteomalacia & rickets	C2		

Surgery

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Shoulder	• Discuss the possible sites of shoulder dislocation	C2	LGIS	MCQs
	• Discuss the consequences of dislocation	C2		

dislocation	<ul style="list-style-type: none"> • Management concepts 	C2		
Tennis elbow, fracture of olecranon, radius and ulna	<ul style="list-style-type: none"> • Describe: • Tennis elbow 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> • Discuss fractures of radius and ulna 	C2		
	<ul style="list-style-type: none"> • Describe the common sites of fracture 	C2		
	<ul style="list-style-type: none"> • Management concepts 	C2		

Biomedical Ethics & Professionalism

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Islamic concepts of Bioethics	<ul style="list-style-type: none"> • Conceptualize the Islamic teachings of medical ethics • Outline the main points in oath of Muslim doctor • Correlate the 4 principles of medical ethics with principles of Islamic medical ethics 	C2 C2	LGIS	MCQs

Radiology/Artificial Intelligence (Innovation)

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Fractures of upper limb	<ul style="list-style-type: none"> • Discuss fractures of upper limb with their clinical significance. • Discuss role of artificial intelligence in interpretation of radiographs 	C2	LGIS	MCQS

Integrated Undergraduate Research Curriculum (IUGRC)

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Practical based teachings				
Practical Session -I	<ul style="list-style-type: none"> • Comprehend their role in under “theme and scheme” of IUGRC-1st Year Practical component 		LGIS	MCQS
	<ul style="list-style-type: none"> • Understand the techniques used to access, retrieve, and review and source of Scientific literature on the given topics (on selected topics for “updated evidence in Health” (UEIH) for poster development. 			
	<ul style="list-style-type: none"> • Make search string and perform literature search using Boolean operators 			
	<ul style="list-style-type: none"> • Access scientific databases and carry out an effective literature review using a number of sources or databases (PubMed) 			

(Club Activity)	• Access HEC Digital library / PERN network use			
	• Understand EBM Cycle & its 5 steps			
	• How to configure & present a scientific poster / element of a scientific poster			
	• How to write References of the information cited			
	• Learn overall posters' work reporting guidelines			

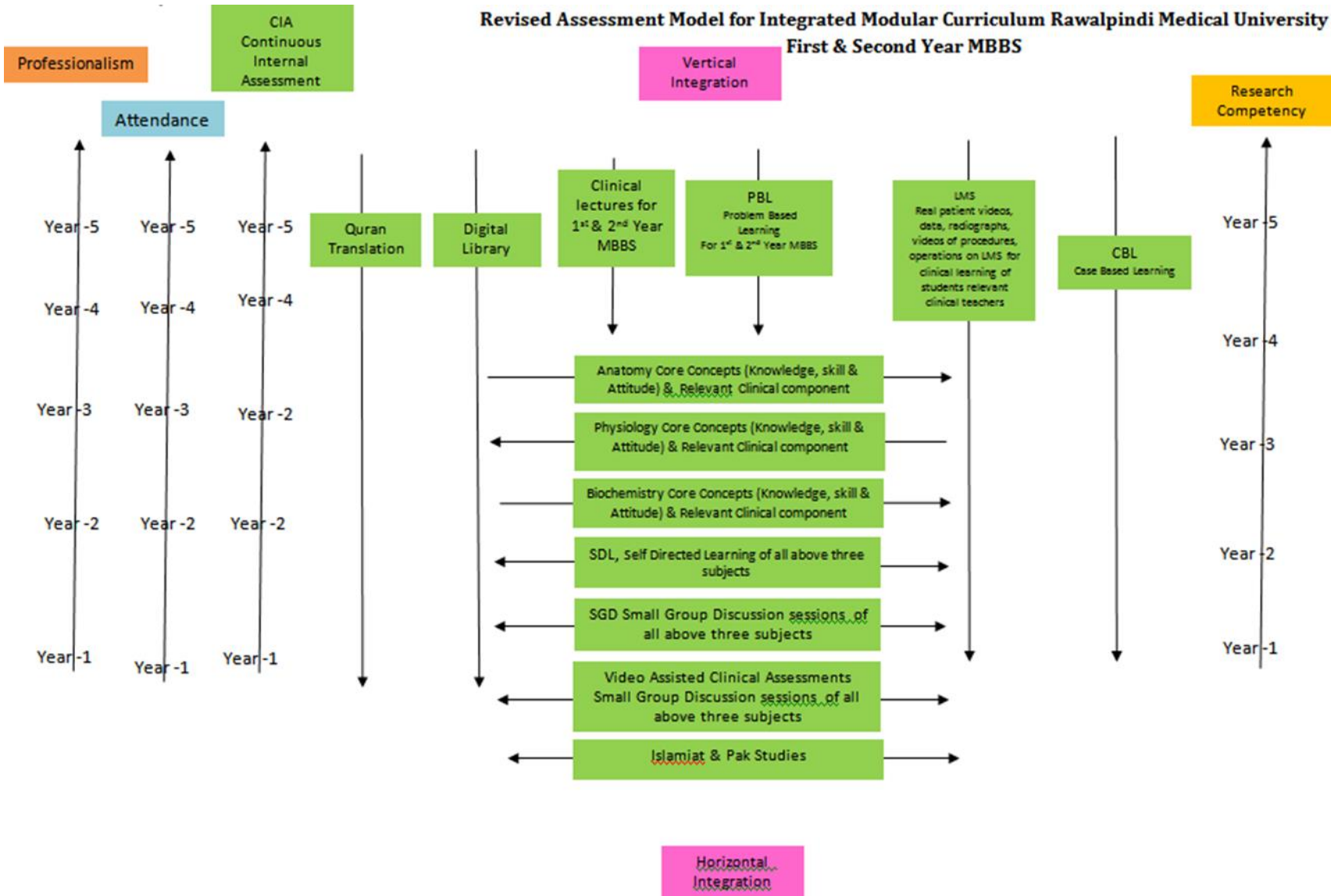
SECTION - IV

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in MSK-I Module**

Revised Assessment Model for Integrated Modular Curriculum Rawalpindi Medical University First & Second Year MBBS



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 - 74%	*75 - 80%	81 - 100%

90% is eligibitlly criteria for appearing in professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular, modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3 rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given the share according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based), modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time In MSK-I Module II

Block	Sr #	Module – 1 MSK-I Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures	Formative	15 Minutes				
	7	Assessment of Bioethics Lectures	Summative	2 Minutes				
	8	Assessment of IUGRC Lectures	Summative	10 Minutes				

Learning Resources

Subject	Resources
Anatomy	<p>A. Gross Anatomy</p> <ol style="list-style-type: none"> 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S.Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III <p>B. Histology</p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. <p>C. Embryology</p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	<p>A. Textbooks</p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. <p>B. Reference Books</p> <ol style="list-style-type: none"> 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Harper's Illustrated Biochemistry 32th edition. 2. Lehninger Principle of Biochemistry 8th edition. 3. Biochemistry by Devlin 7th edition.
Community Medicine	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
Pharmacology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Lippincot Illustrated Pharmacology 9th edition.

SECTION – V

Time Table

Integrated Clinically Oriented Modular Curriculum for First Year MBBS

Msk- I Module Time Table

First Year MBBS

Session 2022-2023

Batch- 50

MSK-I Module Team

Module Name : MSK-I Module
 Duration of module : 05 Weeks
 Coordinator : Dr. Maria Tasleem
 Co-coordinator : Dr. Urooj Shah
 Reviewed by : Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Maria Tasleem (Assistant Professor of Anatomy)
2.	Director DME	Prof. Dr. Rai Muhammad Asghar	2.	DME Focal Person	Dr. Sidra Hamid
3.	Convener Curriculum	Prof. Dr. Naeem Akhter	3.	Co-coordinator	Dr. Urooj Shah (Demonstrator of Anatomy)
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf	4.	Co-Coordinator	Dr. Fahd Anwar (Senior Demonstrator of Physiology)
5.	Additional Director DME	Prof. Dr. Ifra Saeed	5.	Co-coordinator	Dr. Faiza Zafar (Senior Demonstrator of Biochemistry)
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar	DME Implementation Team		
7.	Chairperson Biochemistry	Dr. Aneela Jamil			
8.	Focal Person Anatomy First Year MBBS	Prof. Dr. Ayesha Yousaf	1.	Director DME	Prof. Dr. Rai Muhammad Asghar
9.	Focal Person Physiology	Dr. Sidra Hamid	2.	Implementation Incharge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
10.	Focal Person Biochemistry	Dr. Aneela Jamil	3.	Deputy Director DME	Dr. Shazia Zaib
11.	Focal Person Pharmacology	Dr. Zunera Hakim	4.	Module planner & Implementation coordinator	Dr. Sidra Hamid
12.	Focal Person Pathology	Dr. Asiya Niazi	5.	Editor	Muhammad Arslan Aslam
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir			
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom			
15.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar			

Discipline Wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
I	<ul style="list-style-type: none"> Anatomy 	Skeletal System <ul style="list-style-type: none"> Bones Joints 	General Embryology Second Week of Human Development till Placenta & Fetal Membranes	General Histology <ul style="list-style-type: none"> Connective Tissue Cartilage Bone 	Shoulder joint till Hand
	<ul style="list-style-type: none"> Biochemistry 	<ul style="list-style-type: none"> Minerals, Vitamins, Introduction & Classification of Amino Acids 			
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> NMJ, Introduction Concept of Motor Unit. Neuromuscular Transmission, Synthesis & Fate of Acetylcholine Drugs Acting On NMJ, Myasthenia Gravis, Lambert Eaton Syndrome Structure Of Neurons. Classification Of Neurons & Nerve Fibers Nernst Potential, RMP Recording & Propagation of Action Potential & Factors Effecting Nerve Conduction & Hyperpolarized State Stimulus & Response & Types of Stimuli, Stages of Action Potential 			
	<ul style="list-style-type: none"> Bioethics & Professionalism 	<ul style="list-style-type: none"> Islamic concept of Bioethics 			
	<ul style="list-style-type: none"> Research Club Activity 	<ul style="list-style-type: none"> Comprehend their role in under “theme and scheme” 			
	<ul style="list-style-type: none"> Family Medicine 	<ul style="list-style-type: none"> Approach to a patient with Body Pains 			
	<ul style="list-style-type: none"> Artificial Intelligence/Radiology 	<ul style="list-style-type: none"> Interpretation of upper limb Radiograph & use of AI 			
	<ul style="list-style-type: none"> Vertical components 	<ul style="list-style-type: none"> The Holy Quran Translation Component 			
	<ul style="list-style-type: none"> Vertical Integration 	Clinically content relevant to musculoskeletal-I module <ul style="list-style-type: none"> Shoulder Dislocation (Surgery) Tennis elbow, Fracture of olecranon, Radius and Ulna (Surgery) Osteoporosis (Medicine) Osteomalacia, Rickets & Polyarthritits (Medicine) Accidents (Community Medicine) 			

Categorization of Modular Content of Anatomy:

Category A*	Category B**	Category C			
General Embryology	General Histology	Demonstrations / SGD	CBL	Practical's	(SDL)
<ul style="list-style-type: none"> • Second week of Human Development • Gastrulation (3rd week) • Notochord Formation (3rd week) • Neurulation & differentiation of Somites (3rd week) • Early development of CVS & highlights of 4th-8th week • Folding of Embryo • Fetal period • Placenta • Fetal Membranes & Multiple pregnancy 	<ul style="list-style-type: none"> • Connective Tissue I • Connective Tissue II • Connective Tissue III • Cartilage • Bone 	<ul style="list-style-type: none"> • Gross Anatomy: • Shoulder joint • -Flexor Compartment & Neurovascular organization of Arm • Extensor compartment & Neurovascular organization of Arm • Bones of Forearm • Flexor compartment of forearm • Extensor compartment of forearm • Neurovascular organization of Forearm • Elbow joint • Proximal & Distal radioulnar joints • Bones of Hand • Wrist joint • Dorsum of Hand, Flexor & Extensor retinaculum • Palm of Hand & Facial spaces • Neurovascular organization of Hand • Surface Marking 	<ul style="list-style-type: none"> • Shoulder Dislocation • Wrist Drop 	<ul style="list-style-type: none"> • Histology of connective Tissue I • Connective tissue II • Cartilage • Bone 	<ul style="list-style-type: none"> • Shoulder joint • Flexor and Extensor compartment of arm • Flexor & Extensor compartment of forearm • Elbow joint • Bones of Hand • Wrist joint • Neurovascular organization of Hand

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy department	01
2.	Associate professor of Anatomy department	01
3.	Assistant professor of Anatomy department (AP)	01
4.	Demonstrators of Anatomy department	03

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$2 * 17 = 34$ hours
2.	Small Group Discussions (SGD)	$1.5 * 15 = 22.5$ hours
3.	Case Based Learning (CBL)	$1.5 * 2 = 3$ hours
4.	Practical / Skill Lab	$1.5 * 20 = 30$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$1 * 17 = 17$ hours
2.	Small Group Discussions (SGD)	$1.5 * 15 = 22.5$ hours
3.	Case Based Learning (CBL)	$1.5 * 2 = 3$ hours
4.	Practical / Skill Lab	$1.5 * 4 = 6$ hours
5.	Self-Directed Learning (SDL)	$1 * 7 = 7$ hours

Categorization of Modular Content of Physiology:

Category A*	Category B**	Category C***				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
NMJ, Introduction concept of motor unit. Neuromuscular transmission, synthesis & fate of acetylcholine (Prof. Dr. Samia Sarwar/Dr Aneela)	Structure of neurons. Classification of neurons & nerve fibers (By Dr Sheena Tariq)		1. Paresthesia, Paresis 2. Insecticide poisoning	1. Determination of Hemoglobin concentration 2. Determination of Hematocrit (HCT) 3. Determination of Erythrocyte Sedimentation Rate (ESR) 4. Determination of Differential leukocyte Count (DLC)	1. Nernst potential 2. NMJ, Transmission across NMJ, Diseases of NMJ	1. Structure of neurons. Classification of neurons & nerve fibers 2. Nernst potential, RMP 3. Properties of nerve fibers 4. Measuret of RMP & effect of electrolytes on RMP 5. Concept of degeneration & regeneration 6. Stimulus & response & types of stimuli, Stages of action potential 7. A Refractory period, types of action potential. Graded potential comparison with action potential B. Recording & propagation of action potential & factors effecting nerve conduction & hyperpolarized state SDL: (On Campus) 1. Nernst potential, RMP Action Potential
Drugs acting on NMJ, Myasthenia Gravis, Lambart Eaton Syndrome (Prof. Dr. Samia	Nernst potential, RMP (By Dr Shazia)					

Sarwar/ Dr Aneela)						
	Properties of nerve fibers (By Dr Kamil)					
	Measurement of RMP & effect of electrolytes on RMP (By Dr. Shazia)					
	Concept of degeneration & regeneration (By Dr Kamil)					
	Stimulus & response & types of stimuli, Stages of action potential (By Dr Fareed)					
	Refractory period, types of action potential. Graded potential comparison with action potential (By Dr Shazia)					
	Recording & propagation of action potential & factors effecting nerve conduction & hyperpolarized state (By Dr Fareed)					

Category A*: By Professors

Category B**: By Associate & Assistant Professors

Category C***: By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01 (DME)
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	10X 2 = 20 Hours
2.	Small Group Discussions (SGD)/ Case based learning (CBL)	18x 2 hours = 36hours + 2hours (4th week) +1 hour (1ST week) =39 hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	18x 2 hours= 36hours + 2 hours (4th week) = 38 hours
5.	Self-Directed Learning (SDL)	7 x 1 hour = 7 hours (Off Campus) 4 x 1 hour = 4 hours (On Campus) (Third week)

Categorization of Modular Content of Department Of Biochemistry:

Category A*	Category B**	Category C***			
LGIS	LGIS	PBL	CBL	Practical's	SGD
Minerals: Introduction & Classification. Calcium & Phosphate Minerals: Fluoride, Magnesium, Sulphur Minerals: Copper, Zinc, Selenium, Iodine, Manganese Classification & Structure of Amino Acids & Isomerism	Vitamins: Introduction & Classification. Vitamin A & Vitamin E Vitamin D Vitamin C Niacin & Thiamine		<ul style="list-style-type: none"> • Night Blindness • Rickets 	<ul style="list-style-type: none"> • 7 Colour Tests for Proteins • Serum Calcium & Ascorbic Acid 	Introduction & Classification of Minerals & Vitamins. •Vitamin A, Vitamin E Vitamin C & Vitamin D •Minerals: Calcium, Phosphate, Magnesium, Sulphur, Zinc, Iodine

Category A*: By HOD and Assistant Professor

Category B:** By All (HOD, Assistant Professors, Senior Demonstrators)

Category C*:** By All Demonstrators

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1	Assistant professor of biochemistry department (AP)	02
2	Demonstrators of biochemistry department	08

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	$5 * 1 = 5$ hours	5
2.	Small Group Discussions (SGD)	$1.5 * 5 = 7.5$ hours	7.5
3.	Problem Based Learning (PBL)	$2 * 1 = 2$ hours	02
4.	Practical / Skill Lab	$1.5 * 05$	7.5
5.	Self-Directed Learning (SDL)	$1 * 8 = 8$ hours	08

**Musculoskeletal Module –I First Week
(27-03-2023 To 01-04-2023)**

Day & Date	08:00AM – 08:45AM	08:45AM – 09:30AM	09:30AM – 10:30AM	10:30AM – 11:30AM	11:30PM – 01:00PM	Home Assignment	
Monday 27-03-2023	BIOCHEMISTRY (LGIS)		ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		
	Mineral introduction/ classification/ calcium & Phosphate	Definition & classification of vitamins, Vitamin A, Vitamin E	Embryology		Structure of neurons Classification of neurons and nerve fibers	Nernst Potential& RMP	
			Ibadaat	Second Week of Human Development			Connective tissue - I
Dr. Uzma (Even)	Dr. Almas (Odd)	Dr. Fahd Anwar	Prof. Dr. Ayesha (Even)	Ass. Prof. Dr.Mohtasham (Odd)	Dr. Sheena (Even)	Dr. Shazia (Odd)	
Tuesday 28-03-2023	CBL(DISSECTION)		SURGERY		PHYSIOLOGY(LGIS)		
	Shoulder joint		Shoulder Dislocation		Nerve Potential RMP	Structure of neurons Classification of neurons and nerve fibers	
			Dr Rana Adnan (Even)	Dr . Muhammad Hassan (odd)	Dr. Shazia (Even)	Dr. Sheena (Odd)	
Wednesday 29-03-2023	SGD / DISSECTION		ANATOMY (LGIS)		BIOETHICS		
	Flexor compartment & Neurovascular organization of arm		Histology	Embryology	Islamic concept of Bioethics		
			Connective tissue-I	Second Week of Human Development			
Ass. Prof. Dr. Mohtasham (Even)			Prof. Dr. Ayesha (Odd)	Dr. Kashif Rauf			
Thursday 30-03-2023	CBL / DISSECTION		ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		
	Extensor compartment & Neurovascular organization of arm (Wrist Drop)		General Anatomy	Histology	Properties of nerve Fibers	Measurement & effect of electrolytes on RMP	
			Bone-I	Connective tissue-II			
Dr. Arslan (Even)			Dr. Maria (Odd)	Dr. Kamil (Even)			Dr. Shazia (Odd)
Friday 31-03-2023	MEDICINE		ANATOMY (LGIS)		BIOCHEMISTRY (LGIS)		
	Osteoporosis		Approach to a patient with Body Pains		Histology	Embryology	
					Connective Tissue - II	Gastrulation (3 rd week)	Definition & classification of vitamins, Vitamin A, Vitamin E	Mineral introduction/ classification/ calcium & Phosphate
Dr Saima Mir (Even)	Dr Javaria Malik (odd)	Dr Sadia (Even)	Dr. Sidra Hamid (Odd)	Ass. Prof. Dr Mohtasham (Even)	Prof. Dr. Ayesha (Odd)	Dr. Almas (Even)	Dr. Uzma (Odd)
Saturday 01-04-2023	DISSECTION		ANATOMY (LGIS)		PHYSIOLOGY		
	DISSECTION & SPOTTING		Embryology	General anatomy	Measurement & effect of electrolytes on RMP	Properties of nerve Fibers	
			Gastrulation (3 rd week)	Bone-I			
Prof. Dr. Ayesha (Even)			Ass. Prof. Dr. Arslan (Odd)	Dr. Shazia (Even)	Dr. Sheena (Odd)		

Topics For Practical with Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> Connective Tissue I (Anatomy/Histology-practical) Biuret Test, Ninhydrin Test (Biochemistry practical) Determination of Hemoglobin concentration (Physiology-Practical) 						<ul style="list-style-type: none"> Physiology SGD: Nernst potential (Physiology Lecture Hall 05) Biochemistry SGD: Mineral introduction/ classification/ calcium & Introduction & classification of vitamins, Vitamin A & Vitamin E (Anatomy Lecture Hall 03) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	121-240	Dr. Urooj Shah	Lecture Hall No. 04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	241- onwards	Dr. Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C					
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue						Biochemistry	Physiology	
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq	1.	A	01-70	Dr. Faiza Zafar	Dr. Sheena Tariq	
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani	2.	B	71-140	Dr. Almas Ijaz	Dr. Uzma Kiani	
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)		Dr. Fahd Anwar	3.	C	141-210	Dr. Rahat Afzal	Dr. Fahd Anwar	
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah	4.	D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish	
Batch-C1	(141-175)	Lecture Hall no.04 (Basement)		Dr. Maryam Abbas (PGT Physiology)	5.	E	281-onwards	Dr. Romessa	Dr. Fareed	
Batch-C2	(176-210)	Lecture Hall no.05 (Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)	Venues for Large Group Interactive Session (LGIS) and SDL					
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Romessa (PBL) Dr. Shazia Noreen (SGD)						Odd Roll Numbers		New Lecture Hall Complex Lecture Theater # 03
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)	Even Roll Number		New Lecture Hall Complex Lecture Theater # 02			
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Musculoskeletal Module –I Second Week
03-04-2023 to 08-04-2023

Day & Date	08:00AM – 09:30AM	09:30AM – 10:30AM	10:30AM – 11:30PM	11:30PM – 01:00PM	Home Assignment
Monday 03-04-2023	SGD / DISSECTION	ANATOMY (LGIS)		PHYSIOLOGY(LGIS)	
	Bones of forearm Ulna & Radius	General Anatomy	Embryology	Concept of Degeneration andregeneration	Stimulus & Response & Typeof stimuli. Stages of action potential
		Bone-II	Notochord formation & Differentiation of Somites (3 rd week)		
Ass. Prof. Dr. Arslan (Even)	Prof. Dr. Ayesha (Odd)	Dr. Kamil (Even)	Dr. Fareed (Odd)	Practical & CBL Venue & topic mentioned at the end	SDL Physiology Resting Membrane Potential
Tuesday 04-04-2023	SGD / DISSECTION	ANATOMY (LGIS)		PHYSIOLOGY(LGIS)	
	Flexor compartment of forearm	Embryology	General Anatomy	Stimulus & Response & Typeof stimuli. Stages of action potential	Concept of Degeneration andregeneration
		Notochord formation & Differentiation of Somites (3 rd Week)	Bone-II		
Prof. Dr.Ayesha (Even)	Ass. Prof. Dr. Arslan (Odd)	Dr. Fareed (Even)	Dr. Kamil (Odd)	Practical & CBL Venue & topic mentioned at the end	SDL Physiology Action Potential
Wednesday 05-04-2023	SGD / DISSECTION	ANATOMY (LGIS)		PBL SESSION -I	
	Extensor compartment of forearm	Histology	Embryology	Muscle Weakness PBL Team	
		Connective Tissue-III	Neurulation (3 rd week)		
Ass. Prof. Dr. Mohtasham (Even)	Prof. Dr. Ayesha (Odd)			Practical & CBL Venue & topic mentioned at the end	SDL Biochemistry Biochemical role of vitamin D
Thursday 06-04-2023	SGD / DISSECTION	ANATOMY (LGIS)		BIOCHEMISTRY LGIS	
	Neurovascular organization of forearm	Embryology	Histology	Fluoride, Magnesium & Sulphur Copper, Zinc, Selenium, Iodine, Manganese	Vitamine D
		Neurulation (3 rd week)	Connective Tissue-III		
Prof. Dr. Ayesha (Even)	Ass. Prof. Dr. Mohtasham(Odd)	Dr. Uzma (Even)	Dr. Almas (Odd)	Practical & CBL Venue & topic mentioned at the end	SDL Biochemistry Fluoride, Magnesium & Sulphur Copper, Zinc, Selenium, Iodine, Manganese
Friday 07-04-2023	SGD/ DISSECTION	ANATOMY (LGIS)		PBL SESSION -II	
	Elbow joint & Anastomosis around elbow joint	Embryology	Histology	Muscle Weakness PBL Team	
		Early development of CVS & Highlights of 4 th -8 th week	Cartilage		
Prof. Dr. Ayesha (Even)	Ass. Prof.Dr. Mohtasham (Odd)			SDL Anatomy Flexor & Extensor compartments of forearm	
Saturday 08-04-2023	SGD / DISSECTION	ANATOMY (LGIS)		PHYSIOLOGY(LGIS)	
	Proximal & Distal Radioulnar joints	Histology	Embryology	Refractory period,types of action potential. Graded potential comparison with action potential	Recording & propagation of actionpotential & factors effecting nerve conduction & hyperpolarized state
		Cartilage	Early development of CVS & Highlights of 4 th -8 th week		
Ass. Prof.Dr. Mohtasham (Even)	Prof. Dr. Ayesha (Odd)	Dr Shazia (Even)	Dr. Fareed (Odd)	Practical & CBL Venue & topic mentioned at the end	SDL Anatomy Elbow joint Online LMS Assessment will be conducted in evening

Topics For Practical with Venue						Topics For Small Group Discussion & CBLs With Venue					
<ul style="list-style-type: none"> Connective Tissue II (Anatomy/Histology-practical) Xanthoproteic Test, Millon-Nasse's Test (Biochemistry practical) Determination of Hematocrit (HCT)(Physiology-Practical) 						<ul style="list-style-type: none"> Physiology CBL: Parasthesias, paraesis (Physiology Lecture Hall 05) Biochemistry CBL: Night Blindness (Anatomy Lecture Hall 03) 					
Schedule For Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion					
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue		
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera	Lecture Hall No.03 Anatomy Lecture Hall		
Tuesday	D	C	A	B	E	B	121-240	Dr. Urooj Shah	Lecture Hall No. 04 Anatomy Lecture Hall		
Wednesday	E	D	B	C	A	C	241- onwards	Dr. Ali Raza	Dissection Hall		
Thursday	B	A	D	E	C						
Saturday	A	E	C	D	B						
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers		
Batches	Roll No	Venue						Biochemistry	Physiology		
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq	1.	A	01-70	Dr. Faiza Zafar	Dr. Sheena Tariq		
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani	2.	B	71-140	Dr. Almas Ijaz	Dr. Uzma Kiani		
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar	3.	C	141-210	Dr. Rahat Afzal	Dr. Fahd Anwar		
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah	4.	D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish		
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)	5.	E	281-onwards	Dr. Romessa	Dr. Fareed		
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)							
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)							
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Romessa (PBL) Dr. Shazia Noreen (SGD)	Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03			
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)	Even Roll Number			New Lecture Hall Complex Lecture Theater # 02			
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)							
						Venues for Large Group Interactive Session (LGIS) and SDL					

Musculoskeletal Module –I Third Week
10-04-2023 to 13-04-2023

Day & Date	08:00AM TO 08:45AM	08:45AM TO 09:30AM	09:30AM TO 10:30AM	10:30AM TO 11:30PM	11:30 to 01:00pm	Home Assignment				
Monday 10-04-2023	MEDICINE (LGIS)		BIOCHEMISTRY (LGIS)		ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		Practical & CBL Venue & topic mentioned at the end	SDL Physiology NMJ Online SDL Evaluation
	Osteomalacia, rickets&Polyarthritis		Vitamin D	Fluoride, Magnesium & Sulphur Copper, Zinc, Selenium, Iodine, Manganese	Embryology	Histology	Recording & propagation of action potential & factors effecting nerve conduction & Hyperpolarizedstate	Refractory period,types of action potential. Graded potential comparison with action potential		
	Dr. Umer Daraz (Even)	Dr Iqra Ashraf (Odd)	Dr. Almas (Even)	Dr. Uzma (Odd)	Prof. Dr. Ayesha (Even)	Ass. Prof.Dr. Mohtasham (Odd)	Dr. Fareed (Even)	Dr Shazia (Odd)		
Tuesday 11-04-2023	SGD / DISSECTION			ANATOMY (LGIS)		COMMUNITY MEDICINE	PHYSIOLOGY(LGIS)		Practical & CBL Venue & topic mentioned at the end	SDL Physiology Concept of Degeneration and regeneration
	Bones of Hand			Histology	Embryology	Accidents	NMJ, Introduction concept of motor unit. Neuromuscular transmission, synthesis & fate of acetylcholine			
				Bone	Folding Of Embryo		Prof. Dr. Samia Sarwar/ Dr Aneela (Odd)			
			Ass. Prof.Dr. Mohtasham (Even)	Prof. Dr. Ayesha (Odd)	Dr. Maimoona (Even)	Prof. Dr. Samia Sarwar/ Dr Aneela (Odd)				
Wednesday 12-04-2023	SGD / DISSECTION			ANATOMY (LGIS)		PHYSIOLOGY(LGIS)	COMMUNITY MEDICINE		Practical & CBL Venue & topic mentioned at the end	SDL Biochemistry Deficiency manifestation of thiamine (Online Clinical content Evaluation)
	Wrist joint			General Anatomy	Embryology	Accidents	NMJ, Introduction concept of motor unit. Neuromuscular transmission, synthesis & fate of acetylcholine			
				Joints I	Fetal period		Dr Abdul Quddos (Odd)			
			Ass. Prof. Dr. Arsalan (Even)	Prof. Dr. Ayesha (Odd)	Prof. Dr. Samia Sarwar/ Dr Aneela (Even)	Dr Abdul Quddos (Odd)				
Thursday 13-04-2023	SGD / DISSECTION			ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		Practical & CBL Venue & topic mentioned at the end	SDL Biochemistry Deficiency manifestation of Vitamin A&D	
	Dorsum of Hand, Flexor & Extensor Retinacula			Embryology	General Anatomy	SDL: Nernst Potential & RMP & Action Potential				Drugs acting on NMJ, MyastheniaGravis, Lambart Eaton Syndrome
				Fetal period	Joints I	Dr Shazia (Even)				Prof. Dr. Samia Sarwar /Dr Aneela (Odd)
			Prof. Dr. Ayesha (Even)	Ass. Prof. Dr. Arsalan (Odd)	Dr Shazia (Even)		Prof. Dr. Samia Sarwar /Dr Aneela (Odd)			
Friday 14-04-2023	Eid & Spring Holidays									
Saturday 15-04-2023	Eid & Spring Holidays									

Topics For Practical With Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> ● Cartilage (Anatomy/Histology-practical) ● Tryptophan by Aldehyde Test, Arginine by Sakaguchi's Test (Biochemistry practical) ● Determination of Erythrocyte Sedimentation Rate (ESR)(Physiology-Practical) 						<ul style="list-style-type: none"> ● Physiology CBL: Insecticide poisoning (Physiology Lecture Hall 05) ● Biochemistry SGD: Minerals: Zinc, Selenium, Copper, Iodine, Phosphate, magnesium, sulphur (Anatomy Lecture Hall 03) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	121-240	Dr. Urooj Shah	Lecture Hall No. 04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	241-onwards	Dr. Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C					
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue		Biochemistry	Physiology					
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq	1.	A	01-70	Dr. Faiza Zafar	Dr. Sheena Tariq	
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. UzmaKiani	2.	B	71-140	Dr. Almas Ijaz	Dr. UzmaKiani	
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar	3.	C	141-210	Dr. Rahat Afzal	Dr. Fahd Anwar	
Batch-B2	(106-140)	Conference room(Basement)		Dr. Fareedullah	4.	D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. NayabZonish	
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)	5.	E	281-onwards	Dr. Romessa	Dr. Fareed	
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. IqraAyub (PGT Physiology)	Venues for Large Group Interactive Session (LGIS) and SDL					
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Roamessa (PBL) Dr. Shazia Noreen (SGD)	Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03		
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)	Even Roll Number			New Lecture Hall Complex Lecture Theater # 02		
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Musculoskeletal Module –I Fourth Week
24-04-2023 to 29-04-2023

Day & Date	08:00AM TO 09:00AM	09:00am to 10:00am	10:00am to 11:00am	11:00am to 12:00pm	12:20-02:00 pm	Home Assignment			
Monday 24-04-2023	Eid Holiday								
Tuesday 25-04-2023	Eid Holiday								
Wednesday 26-04-2023	BIOCHEMISTRY (LGIS)		SGD/ DISSECTION		ANATOMY LGIS		Practical & CBL Venue & topic mentioned at the end Saturday Batch (15-4-23)	Practical & CBL Venue & topic mentioned at the end	SDL Anatomy Wrist joint
	Vitamin C, Niacin & Thiamine	Classification & Structure of Amino Acids Isomerism	Palm of Hand & Facial spaces		Embryology	General Anatomy			
	Dr. Almas (even)	Dr. Rahat (Odd)			Placenta	Joints II			
Thursday 27-04-2023	SGD / DISSECTION		ANATOMY LGIS		PHYSIOLOGY LGIS		BREAK 12:00 –12:20PM	Practical & CBL Venue & topic mentioned at the end	SDL Biochemistry Niacin and Thiamin & Classification and structure of Amino acid
	Neurovascular Organization of Hand		General Anatomy	Embryology	Drugs acting on NMJ, Myasthenia Gravis, Lambert Eaton Syndrome	SDL: Nernst Potential & RMP & Action Potential			
			Joints II	Placenta	Prof. Dr. Samia Sarwar / Dr Aneela (Even)	Dr Shazia (Odd)			
Friday 28-04-2023	BIOCHEMISTRY (LGIS)		ARTIFICIAL INTELLIGENCE/RADIOLOGY(LGIS)		ANATOMY LGIS		Practical & CBL Venue & topic mentioned at the end Monday Batch (24-4-23)	SDL Anatomy Neurovascular organization of Hand	
	Classification & Structure of Amino Acids Isomerism	Vitamin C, Niacin & Thiamine	Interpretation of upper limb Radiograph & use of AI		Embryology	Embryology			
	Dr. Rahat (Even)	Dr. Almas (Odd)			Fetalmembranes & multiple pregnancy	Fetal membranes & multiple pregnancy			
Saturday 29-04-2023	SGD / DISSECTION		Practical & CBL		SURGERY LGIS		Practical & CBL Venue & topic mentioned at the end	SDL physiology	
	Cutaneous innervation & Dermatomes of upper limb , Force & weight transmission & Surface Marking		Venue & topic mentioned at the end Tuesday Batch (25-4-23)		Tennis elbow, Fracture of Olecranon, radius, ulna				
					Dr. Junaid Khan	Dr. Rana Adnan			

Topics For Practical With Venue						Topics For Small Group Discussion& CBLs With Venue				
<ul style="list-style-type: none"> ● Bone (Anatomy/Histology-practical) ● Serum Calcium & Ascorbic Acid Estimation (Biochemistry practical) ● Determination of Differential leukocyte Count (DLC)(Physiology-Practical) 						<ul style="list-style-type: none"> ● Physiology: NMJ, Transmission across NMJ, Diseases of NMJ (Physiology Lecture Hall 05) ● Biochemistry CBL: Rickets (Anatomy Lecture Hall 03) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	01-120	Dr. Zeneera	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	121-240	Dr. Urooj Shah	Lecture Hall No. 04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	241-onwards	Dr. Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C					
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL &SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue		Biochemistry	Physiology					
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq	1.	A	01-70	Dr. Faiza Zafar	Dr. Sheena Tariq	
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. UzmaKiani	2.	B	71-140	Dr. Almas Ijaz	Dr. UzmaKiani	
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar	3.	C	141-210	Dr. Rahat Afzal	Dr. Fahd Anwar	
Batch-B2	(106-140)	Conference room(Basement)		Dr. Fareedullah	4.	D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. NayabZonish	
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)	5.	E	281-onwards	Dr. Romessa	Dr. Fareed	
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. IqraAyub (PGT Physiology)	Venues for Large Group Interactive Session (LGIS) and SDL					
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Romessa (PBL) Dr. Shazia Noreen (SGD)						Odd Roll Numbers		New Lecture Hall Complex Lecture Theater # 03
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)	Even Roll Number		New Lecture Hall Complex Lecture Theater # 02			
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Spring Vacation

01 May 2023 To 06 May, 2023

Musculoskeletal Module –I Fifth Week
08-05-2023 to 13-05-2023

Date & Day	8:00 AM – 9:00 AM	11:00AM – 12:00 PM
Monday 08-05-2023	Anatomy /Physiology Viva Voce	
Tuesday 09-05-2023	Anatomy /Physiology Viva Voce	
Wednesday 10-05-2023	Anatomy Theory Paper & Gross OSPE	
Thursday 11-05-2023	Physiology Theory Paper & Video Assisted Quiz	
Friday 12-05-2023	Biochemistry Theory Paper & Allieds	
Saturday 13-05-2023	Integrated OSPE	

(Logistics Details of assessments will be notified separately)

SECTION VI

Table of Specification (TOS) For MSK-I Module Examination for First Year MBBS

Sr. #	Discipline	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Viva voce	Integrated OSPE	Total Marks
						No. of items	Marks						
			C1	C2	C3			C1	C2	C3			
1.	Anatomy	20	10	5	5	4	20	1	2	1	60	45 (15 Stations)	145
2.	Physiology	30	18	9	3	4	20	1	2	1	50		118
3.	Biochemistry	10	5	4	1	3	15	-	1	-	10	10	37
Total Marks												300	
Table of Specification for Clinical Subjects													
1.	Bioethics & Professionalism	2										2	
2.	Research	2										2	
3.	Family Medicine	2										2	
5.	Medicine	5										5	
6.	Surgery	5										5	
7.	Community Medicine	2										2	
8.	Radiology & Artificial Intelligence (Innovation)	2										2	
Total											20		

Table of Specification For Integrated OSPE

Anatomy

Sr. # / Station No	Topics	Knowledge	Skill	Attitude	Marks
Block 1- Upper Limb					
1	Bones and Joints	30%	50%	20%	3
2	Pectoral Region & Breast				3
3	Axillary Region				3
4	Bones and Joints of Arm, Forearm				3
5	Muscles and Neurovascular of Anterior Compartment of Arm				3
6	Muscles and Neurovascular of Posterior Compartment of Arm				3
7	Muscles and Neurovascular of Anterior Compartment of Forearm				3
8	Muscles and Neurovascular of Posterior Compartment of Forearm				3
9	Muscles and Neurovascuature of Hand				3
10	Radiology of Upper Limb				3
Total					30

Sr. # / Station No	Topics	Knowledge	Skill	Attitude	Marks
Block 1- Foundation and MSK-I					
1	Development of Fertilisation to Eighth Week	30%	50%	20%	3
2	Development of Placenta, foetal membranes, Multiple pregnancy and estimation of fetal age.				3
3	Microscopic anatomy of Epithelia				3
4	Microscopic anatomy of Connective Tissue				3
5	Practical Copy				3
Total					15

Physiology

Block – I (Foundation & MSK-I)						
1.	Introduction to compound microscope	30%	50%	20%	1 A	1.5
2.	Apparatus identification (Introduction to Neubauer's chamber, Red Blood Cell (RBC) pipettes & White Blood Cell (WBC) pipette)				1 B	1.5
3.	Introduction to Wintrobe & Westergren tube				2 A	1.5
4.	Determination of Hematocrit (HCT)				2 B	1.5
5.	Apparatus identification (Introduction to centrifuge machine)				3	3
6.	Determination of Hemoglobin concentration				4	3
7.	Determination of Erythrocyte Sedimentation Rate (ESR)				5	3
8.	Practical note book / sketch copy				6	3

Biochemistry

Sr. No	Block	Topic	Knowledge	Skill	Attitude	Station No.	Marks	
1.	Block – I (Foundation & MSK-I)	Adsorption	100%			1A	1	
2.		Surface tension				1B	1	
3.		Tonicity	100%			2A	1	
4.		Introduction to glassware				2B	1	
5.		Calcium estimation	100%			3	2	
6.		Ascorbic estimation						
7.		Casein detection by isoelectric pH						
8.		Color test for amino acids (observed)			90%	10%	4	2
9.		Practical note book			80%	20%	5	2
						Total	10	

Annexure I

(Sample MCQ, SEQ, OSPE & Video Assisted Quiz Papers)

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
1ST YEAR MBBS MCQs MSK-I MODULE EXAM

1. A patient complains of pain in shoulder joint especially during overhead abduction due to rotator cuff injury. The subscapularis is a muscle of the rotator cuff that inserts on,
 - a. Greater tubercle of the humerus
 - b. Lesser tubercle of the humerus
 - c. Coracoid process of the scapula
 - d. Acromion process of the scapula
 - e. Head of humerus
2. A patient presents to the emergency department with a dislocated shoulder. The nerve that could be damaged is,
 - a. Axillary nerve
 - b. Radial nerve
 - c. Median nerve
 - d. Ulnar nerve
3. A patient presents to the emergency department with a humeral shaft fracture. The structures that could be damaged are,
 - a. Axillary nerve and posterior circumflex humeral artery
 - b. Radial nerve and profunda brachii artery
 - c. Median nerve and brachial artery
 - d. Ulnar nerve and ulnar collateral artery
 - e. Musculocutaneous nerve and brachial artery
4. A patient presents to the clinic with a complaint of numbness and tingling on the medial side of the left hand. The nerve involved is,
 - a. Median nerve
 - b. Ulnar nerve
 - c. Radial nerve
 - d. Axillary nerve
5. A phlebotomist performs venepuncture on the vein traveling on the medial side of forearm. This vein is,
 - a. Cephalic vein
 - b. Brachial vein
 - c. Axillary vein
 - d. Basilic vein
 - e. Median antebrachial vein

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
1ST YEAR MBBS SEQs MSK-I MODULE EXAM

Note: Attempt all questions. All questions carry equal marks. Draw diagram where necessary

Q1- A 12-year-old male football player presented to the emergency department with a painful right elbow after a tackle during a game. He reported that he landed on his right arm and felt a sudden, sharp pain in his elbow. He was diagnosed with a fracture of the medial epicondyle of the humerus.

i. Which nerve and artery is affected in this case? (1)

ii. Enlist the muscles supplied by this nerve. (1)

iii. What would be the position of hand in this case? (1)

b. A 45-year-old female office worker presented to the clinic with complaints of numbness and tingling in her right hand, particularly in the thumb, index, and middle finger. On physical examination, there is mild swelling and tenderness over the volar aspect of the right wrist. Tinel's sign was positive, with tingling and numbness elicited upon percussion over the median nerve at the wrist.

i. What is the name of this condition? (1)

ii. Enlist the muscles affected in this case? (1)

Q2- A 55-year-old female presented with pain in her wrist and forearm. Examination revealed tenderness over the anatomical snuffbox.

a) What are its boundaries and contents? (2.5)

b) Trace the course, relations, and branches of the radial artery. (2.5)

RAWALPINDI MEDICAL UNIVERSITY, RWP
PHYSIOLOGY DEPARTMENT
1ST YEAR MBBS MCQs MSK-I MODULE EXAM

1. Plateau in action potential is caused by prolonged opening of:
 - a. Voltage gated K channels
 - b. Chloride channels
 - c. Slow Ca' sodium channels
 - d. K leak Channels
 - e. Voltage gated Ca' Channels

2. Propagation of action potential is ensured because of the following property of action potential:
 - a. Adaptation
 - b. Summation
 - c. All and none law
 - d. Saltatory conduction
 - e. Absolute refractory period

3. The resting potential of a myelinated fiber is primarily dependent on the concentration gradient of:
 - a. Ca
 - b. Cl
 - c. HCO
 - d. K
 - e. Na

4. Drug that stimulates the muscle fibre by Acetylcholine like action is:
 - a. Neostigmine
 - b. Nicotine
 - c. Physostigmine
 - d. D-tubocurarine
 - e. Diisopropylflourophosphate

5. A 35-year-old lady presented with sudden onset of extreme muscle weakness. She could not talk or see. After administration of a drug called neostigmine, her symptoms improved because the drug:
 - a. Activates acetylcholine esterase permanently
 - b. Activates acetylcholine temporarily
 - c. Inhibits acetylcholine permanently:
 - d. Inhibits acetylcholine esterase temporarily
 - e. Releases acetylcholine at the nerve terminus

RAWALPINDI MEDICAL UNIVERSITY, RWP
PHYSIOLOGY DEPARTMENT
1ST YEAR MBBS SEQs MSK-I MODULE EXAM

Q2. A 35-year-old lady presented in emergency department with sudden onset of shortness of breath, dropping of eyelids and slurring of speech. Her serum auto-antibody titer was much raised. These antibodies were directed against ligand- gated-channels at the neuromuscular junction. The symptoms reversed after the administration of a drug prescribed by the duty doctor.

- a. Name the drug. Give its mechanism of action. (1)
- b. Name the disorder she is suffering from. (1)
- c. What is the pathophysiological basis of this disorder? (3)

RAWALPINDI MEDICAL UNIVERSITY, RWP
BIOCHEMISTRY DEPARTMENT
1ST YEAR MBBS MCQs MSK-I MODULE EXAM

1. Pick up element that prevents the development of dental caries?
 - a. Calcium
 - b. Phosphorus
 - c. Sodium
 - d. Fluorine
 - e. Lithium
2. Which of these vitamins can be used in high doses to treat hypercholesterolemia?
 - a. Riboflavin
 - b. Niacin
 - c. Pyridoxine
 - d. Folic acid
 - e. Thiamine
3. Calcium has the following role in the body:
 - a. Formation of organic bone matrix
 - b. Antioxidant
 - c. Second messenger
 - d. Synthesis of rhodopsin
 - e. Role in red cell formation
4. Following vitamin has role in blood clotting:
 - a. Riboflavin
 - b. Vitamin C
 - c. Pyridoxine
 - d. Folic acid
 - e. Vitamin K

SEQ

- | | |
|---|----|
| Q. a. Write down the biological functions of vitamin D. | 03 |
| b. What is the role of vitamin A in visual cycle? | 02 |

RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI
DEPARTMENT OF ANATOMY
1st Year MBBS Integrated OSPE Block-I

Station No. 1 Time Allowed: 1 Min 30secs

Histology sketch copy will be assessed for

- a. omplete index (1)
- b. CComplete and signed diagrams (1)
- c. 2 ID points mentioned with each diagram (1)

Station No. 2 Time Allowed: 1 Min 30secs

- a. Identify slide A (1)
- b. Identify slide B (1)
- c. What are common locations of slide B in human body (1)

RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI
DEPARTMENT OF BIOCHEMISTRY
1st Year MBBS Integrated OSPE Block-I

Station No. 1

Time Allowed: 2 Mins

Observed station

Perform Hay's sulfur test 03

Station No. 2

Time Allowed: 2 Mins

Observed station

Perform Biuret test 03

RAWALPINDI MEDICAL UNIVERSITY
BIOETHICS DEPARTMENT
1ST YEAR MBBS MCQs MSK-I MODULE EXAM

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
 - a. Bio-piracy
 - b. Biosafety
 - c. Bioethics
 - d. Bio-patents
 - e. Bio-logistic
2. The right of patients having self-decision is called.
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
3. Following is not code of ethics.
 - a. Integrity
 - b. Objectivity
 - c. Confidentiality
 - d. Behaviour
 - e. Autonomy
4. -----in the context of medical ethics, if it's fair and balanced
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
5. -----Principle requiring that physicians provide, positive benefits
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity

**RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT
1ST YEAR MBBS VIDEO ASISSTED QUIZ MSK-I MODULE EXAM**

- I. What is this clinical condition? (1)
- II. Describe its features with the muscle affected (4)






Musculoskeletal-II Module

Study Guide
First Year MBBS 2022 - 2023



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University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

Second Year MBBS 2023

Study Guide

MSK-II Module

Discipline Wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
II	<ul style="list-style-type: none"> Anatomy 	<ul style="list-style-type: none"> Muscles Skin 	<ul style="list-style-type: none"> Development of Axial Skeleton Development of limbs Development of muscles 	General Histology <ul style="list-style-type: none"> Muscles Skin Skin appendages 	Gluteal Region to Lateral compartment of leg
	<ul style="list-style-type: none"> Biochemistry 	<ul style="list-style-type: none"> Protein chemistry, Protein separation techniques, Collagen and Elastin 			
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle. Molecular Mechanism of skeletal muscle contraction, Rigormortis, Muscular dystrophies Introduction to muscle physiology, Structure of sarcomere Energetics, efficiency and types of contraction, heat production in muscle Physiologic anatomy, types and properties of Smooth Muscle Mechanism of smooth muscle contraction & its control Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential Regulation of myocardial activity Comparison of 3 types of Muscle Introduction to CVS Excitatory & Conducting system of heart 			
	<ul style="list-style-type: none"> Bioethics & Professionalism 	<ul style="list-style-type: none"> Introduction to Professional Ethics and PM&DC Code of Conduct History of Medical Ethics 			
	<ul style="list-style-type: none"> Research Club Activity (IUGRC) 	<ul style="list-style-type: none"> Student Practical Session-I Student Practical Session-II 			
	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Communication Skills 			
	<ul style="list-style-type: none"> Behavioural Sciences 	<ul style="list-style-type: none"> Rights and Responsibilities of patients and doctors 			
	<ul style="list-style-type: none"> Radiology & Artificial Intelligence 	<ul style="list-style-type: none"> x-rays of hipbone lower limb 			
	<ul style="list-style-type: none"> Vertical components 	<ul style="list-style-type: none"> The Holy Quran Translation Component 			
	<ul style="list-style-type: none"> Vertical Integration 	<ul style="list-style-type: none"> Clinically co-related lectures 			

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MSK-II Module Team

Module Name	:	MSK- II Module
Duration of module	:	05 Weeks
Coordinator	:	Dr. Fahd Anwar
Co- Coordinator	:	Dr. Sajjad Hussain
Reviewed by	:	Module Committee

Module Committee		Module task force	
Vice Chancellor RMU	Prof. Dr. Muhammad Umar	Coordinator	Dr. Fahd Anwar
Director DME	Prof. Dr. Rai Muhammad Asghar	DME Focal Person	Dr. Sidra Hamid
Convener Curriculum	Prof. Dr. Naeem Akhter	Co-coordinator	Dr. Sajjad Hussain (Senior Demonstrator of Anatomy)
Chairperson Anatomy & Dean Basic Sciences	Prof Dr. Ayesha Yousaf	Co-Coordinator	Dr. Almas (Senior Demonstrator Biochemistry)
Additional Director DME	Prof. Dr. Ifra Saeed	Co-coordinator	Dr. Fareed Ullah Khan (Senior Demonstrator Physiology) & Clinical Co- Coordinator
Chairperson Physiology	Prof. Dr. Samia Sarwar		
Chairperson Biochemistry	Dr. Aneela Jamil	DME Implementation Team	
		Director DME	Prof. Dr. Rai Muhammad Asghar
Focal Person Anatomy First Year MBBS	Prof Dr. Ayesha Yousaf	Implementation Incharge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
Focal Person Physiology	Dr. Sidra Hamid	Deputy Director DME	Dr. Shazia Zeb
Focal Person Biochemistry	Dr. Aneela Jamil	Module planner & Implementation coordinator	Dr. Sidra Hamid
Focal Person Pharmacology	Dr. Zunera Hakim	Editor	Muhammad Arslan Aslam
Focal Person Pathology	Dr. Asiya Niazi		
Focal Person Behavioral Sciences	Dr. Saadia Yasir		
Focal Person Community Medicine	Dr. Afifa Kulsoom		
Focal Person Quran Translation Lectures	Dr. Fahd Anwar		

Module III – MSK-II Module

Rationale: This module describes the structural organization, functions, and congenital anomalies of musculoskeletal system. It explains the mechanism of neuromuscular transmission, comparison of three types of muscle and physiology of smooth and cardiac muscle, its biochemical basis and the importance of Ca⁺⁺ in the body. This module covers cardiac muscle physiology including conducting system of heart. It depicts structure and function of joints in upper and lower limb. It elaborates identification of common fractures of long bones on radiograph.

Module Outcomes

At the end of this module the student should be able to:

Knowledge:

1. Explain the development & structure of musculoskeletal system.
2. Explain the physiological and biochemical factors affecting neuromuscular transmission.
3. Explain physiology of smooth and cardiac muscle.
4. Apply the knowledge of the basic sciences to understand common fractures.
5. Use technology based medical education including
 - **Artificial Intelligence.**
6. Appreciate concepts & importance of
 - **Family Medicine**
 - **Biomedical Ethics**
 - **Research**

Skill:

1. Dissect limbs to demonstrate regional Anatomy and relationships of various structures to each other.
2. Identify histological features of connective tissue and muscles under microscope.
3. Perform practicals on estimation of calcium and protein chemistry.

Attitude:

1. Demonstrate a professional attitude, team building spirit and good communication skills and cadaveric handling.

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning

Methodologies/Strategies

- Large Group Interactive Session (LGIS)
- Small Group Discussion (SGD)
- Self-Directed Learning (SDL)
- Case Based Learning (CBL)
- Problem- Based Learning (PBL)
- Skill Labs/Practicals (SKL)

Tables & Figures

- Table1. Domains of learning according to Blooms Taxonomy
- Figure 1. Prof Umar's Model of Integrated Lecture
- Table2. Standardization of teaching content in Small Group Discussions
- Table 3. Steps of taking Small Group Discussions
- Figure 2. PBL 7 Jumps Model

Table1. Domains of Learning According to Blooms Taxonomy

Sr. #	Abbreviation	Domains of learning
1.	C	Cognitive Domain: knowledge and mental skills.
	• C1	Remembering
	• C2	Understanding
	• C3	Applying
	• C4	Analyzing
	• C5	Evaluating
	• C6	Creating
2.	P	Psychomotor Domain: motor skills.
	• P1	Imitation
	• P2	Manipulation
	• P3	Precision
	• P4	Articulation
	• P5	Naturalization
3.	A	Affective Domain: feelings, values, dispositions, attitudes, etc
	• A1	Receive
	• A2	Respond
	• A3	Value
	• A4	Organize
	• A5	Internalize

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

The large group interactive session is structured format of Prof Umar Model of Integrated lecture. It will be followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explains the underlying phenomena through questions, pictures, videos of patients, interviews and exercises, etc. Students are actively involved in the learning process.

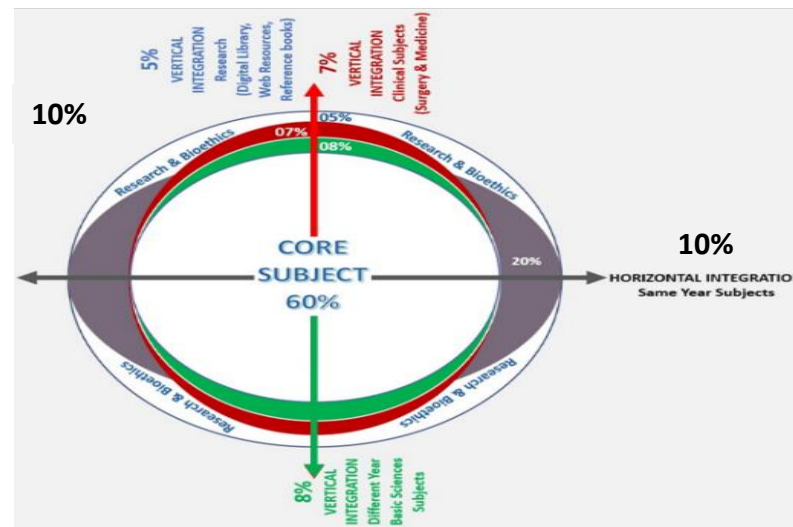


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

This format helps students to clarify concepts acquire skills and attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics or power point presentations. Students exchange opinions and apply knowledge gained from lectures, SGDs and self study. The facilitator role is to ask probing questions, summarize and help to clarify the concepts.

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementaion of Small Group Discussions

Step 1	Sharing of Learning objectives by using students Study guides	First 5 minutes
Step 2	Asking students pre-planned questions from previous teaching session to develop co-relation (these questions will be standardized)	5minutes
Step 3	Students divided into groups of three and allocation of learning objectives	5minutes
Step 4	ACTIVITY: Students will discuss the learning objectives among themselves	15 minutes
Step 5	Each group of students will present its learning objectives	20 min
Step 6	Discussion of learning content in the main group	30min
Step 7	Clarification of concept by the facilitator by asking structured questions from learning content	15 min
Step 8	Questions on core concepts	
Step 9	Questions on horizontal integration	
Step 10	Questions on vertical integration	
Step 11	Questions on related research article	
Step 12	Questions on related ethics content	
Step 13	Students Assessment on online MS teams (5 MCQs)	5 min
Step 14	Summarization of main points by the facilitator	5 min
Step 15	Students feedback on the SGD and entry into log book	5 min
Step 16	Ending remarks	

Self Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be defined
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:
 - i Will be online on LMS (Mid module/ end of Module)
 - ii.OSPE station

Case Based Learning (CBL)

- It's a learner centered model which engages students in discussion of specific scenarios that typically resemble real world examples.
- Case scenario will be given to the students
- Will engage students in discussion of specific scenarios that resemble or typically are real-world examples.
- Learning objectives will be given to the students and will be based on
 - i. To provide students with a relevant opportunity to see theory in practice
 - ii. Require students to analyze data in order to reach a conclusion.
 - iii. Develop analytic, communicative, and collaborative skills along with content knowledge.

Problem Based Learning (PBL)

- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.
- This problem is what drives the motivation and the learning.

The 7- Jump-Format of PBL (Masstricht Medical School)	
Step 7	Synthese & Report
Step 6	Collect Information from outside
Step 5	Generate learning Issues
Step 4	Discuss and Organise Ideas
Step 3	Brainstorming to Identify Explanations
Step 2	Define the Problem
Step 1	Clarify the Terms and Concepts of the Problem Scenario
	Problem- Scenario

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide	10-15 minutes
Practical work	25-30 minutes
Write/ draw and get it checked by teacher	20-25 minutes
05 mcqs at the end of the practical	10 minutes
At the end of module practical copy will be signed by head of department	
At the end of block the practical copy will be signed by	
Head of Department	
Dean	
Medical education department	
QEC	

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- Large Group Interactive Session:
 - Anatomy (LGIS)
 - Physiology (LGIS)
 - Biochemistry (LGIS)
- Small Group Discussions
 - Anatomy (SGD)
 - Physiology (SGD)
 - Biochemistry (SGD)
- Self Directed Topic, Learning Objectives & References
 - Anatomy (SDL)
 - Physiology (SDL)
 - Biochemistry (SDL)
- Skill Laboratory
 - Anatomy
 - Physiology
 - Biochemistry

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
General Anatomy Muscle I	<ul style="list-style-type: none"> • Classify muscles with examples according to <ol style="list-style-type: none"> i) Shape` ii) Histology iii) Development iv) Contraction • Describe the general features of skeletal muscle. • Differentiate between Red white and intermediate fibers. • Describe blood supply and nerve supply of skeletal muscles. • Correlate clinical condition • How to use digital library • Read a research article 	C1 C2 C2 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA
General Histology Muscle-I	<ul style="list-style-type: none"> • Classify muscle on histological basis. • Describe histological structure of skeletal muscles • Discuss ultrastructure of skeletal muscles • Understand the contraction mechanism • Correlate clinical condition • How to use digital library • Read a research article 	C1 C2 C2 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA
General Anatomy Muscle II	<ul style="list-style-type: none"> • Discuss connective tissue associated with skeletal muscle. • Discuss parts of skeletal muscles. • Give classification of skeletal muscles. • Explain the actions of a prime mover or agonist Fixators • Synergist and antagonist with examples. • Correlate clinical condition • How to use digital library • Read a research article 	C2 C2 C1 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA

General Histology Muscle-II	<ul style="list-style-type: none"> Describe histological structure of cardiac and smooth muscles Describe ultrastructure of smooth and cardiac muscles. Differentiate between skeletal smooth and cardiac muscles. Discuss regeneration of muscle fibers Correlate clinical condition How to use digital library Read a research article 	C2 C2 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA
General Histology Skin	<ul style="list-style-type: none"> Enlist components of integumentary system Describe histological structure of skin with special reference to cells residing in epidermis. Describe histological features of thick and thin skin Differentiate between thick and thin skin Correlate clinical condition How to use digital library Read a research article 	C1 C2 C2 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA
General Embryology Development of axial skeleton	<ul style="list-style-type: none"> Discuss the cartilagenous stage of vertebral column Discuss the bony stage of vertebral column Describe development of ribs and sternum. Correlate clinical condition How to use digital library Read a research article 	C2 C2 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA
General Histology Skin appendages	<ul style="list-style-type: none"> Describe appendages of skin Discuss histological structure of hair Discuss histological structure of nail Discuss histological structure of glands of skin Correlate clinical conditions How to use digital library Read a research article 	C2 C2 C2 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA
General Embryology Development of limbs	<ul style="list-style-type: none"> Enlist different stages of limb development Discuss early and late stage of limb development Correlate congenital anomalies of limb development How to use digital library 	C1 C2 C3 C3	LGIS	MCQ SAQ VIVA

	<ul style="list-style-type: none"> • Read a research article 	C3		
General Embryology Development of muscles	<ul style="list-style-type: none"> • Discuss development of skeletal muscle with special reference to myotomes, pharyngeal arch muscles and limb muscle along with limb skeleton. • Describe development of smooth and cardiac muscles with anomalies. • Correlate clinical condition • How to use digital library • Read a research article 	C2 C2 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA
General Anatomy Skin	<ul style="list-style-type: none"> • Enlist functions of skin • Discuss types of skin • Compare between thick and thin skin • Classify skin lines • Describe the significance of skin lines • Discuss burns of skin • Correlate clinical conditions • How to use digital library • Read a research article 	C1 C2 C2 C1 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	References	Learning Resources
Introduction to muscle physiology, Structure of Sarcomere	<p>Explain the physiologic anatomy of skeletal muscle</p> <p>Draw and label the sarcomere</p>	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology. 25TH Edition. Section 01, Excitable tissue: Muscle (Chapter 05, Page 99) • Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 34) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 411) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 79) 	<ol style="list-style-type: none"> 1. https://youtu.be/8iklTDIra5Q 2. https://www.sciencedirect.com/science/article/abs/pii/S0197018687901070 3. https://teachmeanatomy.com/histology/tissue-structure/muscle-histology/skeletal-muscle/
Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle	<p>Discuss the sliding filament model of muscle contraction</p> <p>Describe the structure sarcotubular system and its importance in muscle contraction</p>	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology. 25TH Edition. Section 01, Excitable tissue: Muscle (Chapter 05, Page 103) • Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 36) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 413, 421) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04, page 68) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 81) (Chapter 07, Page 93, 97) 	<ol style="list-style-type: none"> 1. https://www.sciencedirect.com/science/article/abs/pii/S0197018687901070 2. https://youtu.be/8iklTDIra5Q 3. https://link.springer.com/article/10.1007/s12551-013-0135-x

<p>Molecular Mechanism of skeletal muscle contraction, Rigor mortis, Muscular dystrophies</p>	<p>Define motor unit Discuss recruitment and its effect on force of contraction Discuss Molecular Mechanism of skeletal muscle contraction</p>	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 36) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 413, 421) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04, page 70) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 82, 88) 	<ol style="list-style-type: none"> 1. https://youtu.be/RTnKBt2sDf0 2. https://youtu.be/NvV2xTrShvg
<p>Length tension curve, Load and velocity of contraction, diseases of muscle</p>	<p>Draw and describe Length duration curve Load and velocity of contraction</p>	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 39) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 431, 435) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04, page 74) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 91) 	<ol style="list-style-type: none"> 1. https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=85&ContentID=P00792 2. https://www.sciencedirect.com/topics/engineering/length-tension-curve
<p>Energetics, efficiency and types of contraction, heat production in muscle</p>	<p>Elaborate Energetic and efficiency of contraction. Discuss heat production in nerve and muscle</p>	<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 431) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04, page 77, 84) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 85, 87) 	<ol style="list-style-type: none"> 1. https://www.sciencedirect.com/topics/engineering/length-tension-curve 2. https://youtu.be/3ntuIKD4kvY

<p>Properties of skeletal muscles, Tetanus & Fatigue</p>	<p>Discuss various properties of skeletal muscle in detail Tetanus and fatigue</p>	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 01,Excitable tissue:Muscle (Chapter 05, Page 110) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 422,424,428) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04,page 74,86) 	<ol style="list-style-type: none"> 1. https://youtu.be/v5Nm_LaAQVo 2. https://www.sciencedirect.com/science/article/abs/pii/S2387020622003485
<p>Introduction to CVS</p>	<p>Introduction to Cardiovascular system. Classify blood vessels</p>	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 05,Cardiovascular physiology (Chapter 29, Page 519) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Cardiovascular physiology (Chapter 14,Page 469) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 02, Introduction to Cardiovascular system.(Chapter 05,page 101) 	<ol style="list-style-type: none"> 1. https://youtu.be/28CYhgjrBLA 2. https://litfl.com/cardiovascular-physiology-overview/
<p>Physiologic anatomy, types and properties of Smooth Muscle</p>	<p>Enlist type of smooth muscles and explain their characteristics Explain the properties of smooth muscle</p>	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 40) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 436) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Excitation and Contraction of Smooth muscle.Section 02. (Chapter 08, Page 101) 	<ol style="list-style-type: none"> 1. https://www.kenhub.com/en/library/anatomy/smooth-musculature 2. https://youtu.be/qEVRoKuo4U

<p>Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential</p>	<p>Describe the physiologic anatomy of myocardium Discuss properties of myocardium Discuss in detail various properties of myocardium Describe the mechanism of production of action potential and its propagation Describe excitation contraction coupling in detail Discuss propagation of electrical activity in cardiac muscle</p>	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition. Cardiovascular Physiology (Chapter 14. Page 131) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 482) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. (Chapter 09, Page 114) 	<ol style="list-style-type: none"> 1. https://youtu.be/L2Gf9cj7jBw 2. https://www.sciencedirect.com/topics/medicine-and-dentistry/cardiac-action-potential
<p>Mechanism of smooth muscle contraction & its control</p>	<p>Explain the chemical and physical basis of smooth muscle contraction</p>	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 42) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 439, 443) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Excitation and Contraction of Smooth muscle. Section 02. (Chapter 08, Page 103, 105) 	<ol style="list-style-type: none"> 1. https://www.kenhub.com/en/library/anatomy/smooth-musculature 2. https://youtu.be/qEVRoKuo4U
<p>Regulation of myocardial activity</p>	<p>Describe the regulation of pumping activity of heart</p>	<ul style="list-style-type: none"> • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Excitation and Contraction of Smooth muscle. Section 02. (Chapter 09, Page 123) 	<ol style="list-style-type: none"> 1. https://pubmed.ncbi.nlm.nih.gov/1661829/ 2. https://www.sciencedirect.com/topics/medicine-and-dentistry/cardiac-action-potential
<p>Comparison of 3 types of muscle</p>	<ul style="list-style-type: none"> • Discuss differences among three types of muscle in detail 	<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 444) 	<ol style="list-style-type: none"> 1. https://training.seer.cancer.gov/anatomy/muscular/types.html 2. https://youtu.be/eShBZ3-RxHA

Excitatory & Conducting system of heart	<ul style="list-style-type: none"> Describe the conductive system of heart in detail Enlist the various components of conductive system of heart Describe the mechanism of production of action potential in SA node, AV node, ventricles.also describe its propogation 	<ul style="list-style-type: none"> Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 488) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 08,page 155,162) Textbook of Medical Physiology by Guyton & Hall.14th Edition.Section 02. (Chapter 10, Page 127,133) 	<ol style="list-style-type: none"> https://youtu.be/TnFoJ7Hhi-M https://teachmeanatomy.info/thorax/organs/heart/conducting-system/
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Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching strategy	Assessment Tool
Protein chemistry				
Properties of amino acids& Important peptides	<ul style="list-style-type: none"> Describe amphoteric properties of amino acids Discuss Post transitional amino acids and location of amino acids in proteins Explain Important peptides 	C2 C2 C2	LGIS	MCQs, SAQs & Viva
Proteins	<ul style="list-style-type: none"> Discuss Importance of proteins Classify proteins Describe Functions of proteins 	C1 C2 C2	LGIS	MCQs, SAQs & Viva
Primary structure of proteins	<ul style="list-style-type: none"> Describe Primary structure of protein Discuss Peptide bond 	C2 C2	LGIS	MCQs, SAQs & Viva
Secondary structure of proteins	<ul style="list-style-type: none"> Enlist Types of secondary structure. Describe Secondary structure of proteins. Elaborate Significance of secondary structure 	C1 C2 C2	LGIS	MCQs, SAQs & Viva
	<ul style="list-style-type: none"> Describe Tertiary and quaternary structure of proteins 	C2	LGIS	MCQs, SAQs &

Tertiary and quaternary structure	<ul style="list-style-type: none"> • Understand the forces stabilizing protein structure 	C2		Viva
Protein folding And denaturation	<ul style="list-style-type: none"> • Discuss Folding of proteins • Describe protein misfolding • Interpret the clinical cases related to protein misfolding • Discuss denaturation of proteins 	C2 C2 C3 C2	LGIS	MCQs, SAQs & Viva
Collagen and Elastin	<ul style="list-style-type: none"> • Describe structure of collagen and elastin • Discuss differences between collagen and elastin • Explain Synthesis of collagen • Enlist Factor regulating and helping in strengthening of collagen • Interpret defects of collagen synthesis and elastin 	C2 C2 C2 C1 C3	LGIS	MCQs, SAQs & Viva
Techniques for separation of proteins	<ul style="list-style-type: none"> • Describe Techniques for separation of proteins 	C2	LGIS	MCQs, SAQs & Viva

Anatomy Small Group Discussion (SGDs)

Topic	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tools
Hip Bone-I	<ul style="list-style-type: none"> • Demonstrate the anatomical position • Identify bony features of ilium. • Describe the muscular, ligamentous, and capsular attachments. • Discuss the ventral and dorsal auricular surfaces, ossification. • Correlate the clinical aspects • Read relevant research article • Use digital library 	P C1 C2 C2 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Hip Bone-II	<ul style="list-style-type: none"> • Demonstrate the anatomical position • Identify bony features of pubis and ischium. • Describe the muscular, ligamentous, and capsular attachments. • Discuss the ventral and dorsal auricular surfaces, ossification. • Correlate the clinical aspects • Read relevant research article • Use digital library 	P C1 C2 C2 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Femur	<ul style="list-style-type: none"> • Demonstrate the anatomical position of bone • Demonstrate different parts • Describe proximal and distal articulations • State angle of femoral torsion. • Correlate the clinical aspects • Read relevant research article • Use digital library 	P C1 C2 C1 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE

Femur and Patella	<ul style="list-style-type: none"> • Demonstrate the anatomical position of bones • Describe muscle attachment and ossification • Discuss fractures with special reference to the fracture of neck of femur in old age. • Describe anatomy of patella and factors responsible for its stability. • Enumerate different bursae related to patella • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>P C2 C3</p> <p>C2</p> <p>C1 C3 C3 C3</p>	Skill Lab	<p>MCQ SEQ VIVA OSPE</p>
Anterolateral Compartment Of Thigh (Muscles)	<ul style="list-style-type: none"> • Describe the origin and insertion of muscles in anterior compartment of thigh. • Describe the origin and insertion of muscles in lateral compartment of thigh. • Discuss the femoral triangle and adductor canal with contents • Identify these muscles. • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>C2</p> <p>C2</p> <p>C2</p> <p>C1 C3 C3 C3</p>	Skill Lab	<p>MCQ SEQ VIVA OSPE</p>
Anterolateral compartment of thigh (Neurovascular organization)	<ul style="list-style-type: none"> • Describe the nerves and vessels of anterolateral compartment of thigh • Discuss various relation of vessels and nerves in anterolateral compartment of thigh • Identify these structures • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>C2</p> <p>C2</p> <p>C1 C3 C3 C3</p>	Skill Lab	<p>MCQ SEQ VIVA OSPE</p>
Medial Compartment of thigh	<ul style="list-style-type: none"> • Describe the muscles of medial compartment of thigh • Discuss origin, insertion and nerve supply of medial compartment of thigh • Describe the course relations and branches of obturator nerve. • Correlate the clinical aspects 	<p>C2</p> <p>C2</p> <p>C2 C3</p>	Skill Lab	<p>MCQ SEQ VIVA OSPE</p>

	<ul style="list-style-type: none"> • Read relevant research article • Use digital library 	C3 C3		
Gluteal Region (Muscles)	<ul style="list-style-type: none"> • Tabulate the he various muscles of gluteal region with origin, insertion, action nerve supply. • Enlist various structures undercover of gluteal maximus i.e. muscles, vessels, nerves, bones and joints, ligaments, bursae. • Correlate the clinical aspects • Read relevant research article • Use digital library 	C2 C1 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Gluteal Region (Neurovascular organization)	<ul style="list-style-type: none"> • Describe trochanteric anastomosis and cruciate anastomosis. • Enumerate the structures passing through greater sciatic foraman. • Discuss the formation course relations, branches, distribution of sciatic nerve with applied anatomy.. • Correlate the clinical aspects • Read relevant research article • Use digital library 	C2 C1 C2 C2 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Posterior Compartment of Thigh (Muscles)	<ul style="list-style-type: none"> • Enlist the Hamstring muscles • Discuss origin insertion, nerve supply and actions • Identify the muscles • Correlate the clinical aspects • Read relevant research article • Use digital library 	C1 C2 C1 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Posterior Compartment of thigh (Neurovascular Organization)	<ul style="list-style-type: none"> • Describe the nerves and vessels of posterior compartment of thigh • Discuss course, relations , distribution and branches of neurovascular structures of posterior compartment • Identify these structures • Correlate the clinical aspects • Read relevant research article 	C2 C2 C1 C3	Skill Lab	MCQ SEQ VIVA OSPE

	<ul style="list-style-type: none"> • Use digital library 	C3 C3		
Hip Joint	<ul style="list-style-type: none"> • Describe the type of joint • Describe articular surfaces, • Describe capsular attachments. • Discuss synovial membrane and its folding. • Enlist ligaments and their attachments • Discuss movements possible at hip joint and muscles producing them • Describe blood supply and nerve supply. • Correlate the clinical aspects • Read relevant research article • Use digital library 	C2 C2 C2 C2 C1 C2 C2 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Tibia	<ul style="list-style-type: none"> • Identify bone • Demonstrate its side. • Demonstrate its normal anatomical position. • Describe bony features. • Discuss attachment of muscle and ligament • Describe articular surfaces • Identify nutrient foramen • Describe its ossification • Correlate the clinical aspects • Read relevant research article • Use digital library 	C1 P P C2 C2 C2 C1 C2 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Fibula	<ul style="list-style-type: none"> • Identify bone • Demonstrate its side. • Demonstrate its normal anatomical position. • Describe bony features. • Discuss attachment of muscles and ligaments • Describe articular surfaces • Identify nutrient foramen • Describe its ossification • Correlate the clinical aspects • Read relevant research article 	C1 P P C2 C2 C2 C1 C2 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE

	<ul style="list-style-type: none"> • Use digital library 	C3		
Popliteal Fossa	<ul style="list-style-type: none"> • Identify surface landmarks • Enlist contents • Discuss boundaries, roof and floor • Correlate the clinical aspects • Read relevant research article • Use digital library 	C1 C1 C2 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Knee Joint	<ul style="list-style-type: none"> • State type of joint • Describe its articular surfaces • Demonstrate capsular attachments, • Enlist extra capsular and intracapsular ligaments and their attachments • Demonstrate the movements possible at knee joint and muscles producing them. • Describe the concept of locking and unlocking of knee joint • Describe blood supply and nerve supply of joint • Correlate the clinical aspects • Read relevant research article • Use digital library 	C1 C2 P C1 C1 p C2 C2 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Anterior Compartment Of Leg (Muscles and Neurovascular Organization)	<ul style="list-style-type: none"> • Demonstrate surface landmarks • Discuss superficial fascia & deep fascia, their contents including retinecula • Describe Origin, insertion, nerve supply and action of all muscles of anterior compartment of leg • Identify different structures in compartment • Correlate the clinical aspects • Read relevant research article • Use digital library 	P C2 C2 C1 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
Surface Anatomy/Radiology	<ul style="list-style-type: none"> • Demonstrate the surface anatomy of various structures present in anterior, medial and lateral compartment of thigh • Demonstrate the surface anatomy of various structures present in anterior compartment of thigh 	P P	Skill Lab	MCQ SEQ VIVA OSPE

	<ul style="list-style-type: none"> • Demonstrate major landmarks of thigh and anterior compartment of leg on radiographs • Correlate the clinical aspects • Read relevant research article • Use digital library 	P C3 C3 C3		
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Physiology Small Group Discussion (SGDs)

Topic	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tools
Physiology of Smooth Muscle	• Enlist type of smooth muscles and explain their characteristics	C1	SGD	MCQ SAQ VIVA
	• Explain the chemical and physical basis of smooth muscle contraction	C2		
	• Explain the properties of smooth muscle	C2		
Introduction to myocardium Properties of myocardium Myocardial action potentials and regulation of myocardial activity	• Describe the physiologic anatomy of myocardium	C1	SGD	MCQ SAQ VIVA
	• Discuss properties of myocardium			
	• Discuss in detail various properties of myocardium	C2		
	• Describe the mechanism of production of action potential and its	C1		
	• Discuss propagation of electrical activity in cardiac muscle	C2		
	• Describe excitation contraction coupling in detail	C1		
ECG changes in blocks and arrhythmias	• Describe the regulation of pumping activity of heart	C1	LGIS	MCQ SAQ VIVA
	• Define arrhythmia	C1		
	• Describe abnormal sinus rhythms	C1		
	• Discuss and draw ECG changes in arrhythmias	C2		
	• Describe abnormal rhythms resulting from the block of heart signals within the intra cardiac conduction pathways	C1		
	• Describe different degrees of heart block and ECG changes	C1		
• Describe abnormal rhythms resulting from the block of heart signals within the intra cardiac conduction pathways	C1			

	<ul style="list-style-type: none"> • Explain the following with the help of relevant ECGs. • Premature contractions. • Paroxysmal tachycardia. • Ventricular fibrillation. • Atrial fibrillation. • Atrial flutter. • Cardiac arrest. 	C2		
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Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives At The End of Tutorial Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Protein structure	<ul style="list-style-type: none"> • Explain primary, secondary, tertiary and quaternary structures of proteins 	C2	SGD	MCQs & SAQs
Protein folding and misfolding	<ul style="list-style-type: none"> • Describe protein folding with related disorders 	C2	SGD	MCQs & SAQs
Collagen	<ul style="list-style-type: none"> • Discuss structure of collagen • Describe synthesis of collagen • Interpret related clinical disorders 	C2 C2 C3	SGD	MCQs & SAQs
Elastin	<ul style="list-style-type: none"> • Discuss structure of elastin • Interpret related clinical disorders 	C2 C2	SGD	MCQs & SAQs

Anatomy Self Directed Learning (SDL)

Topics Of SDL	Learning Objective	References
Hip Bone	<ul style="list-style-type: none"> • Demonstrate the anatomical position • Identify bony features of ilium. • Describe the muscular, ligamentous, and capsular attachments. • Discuss the ventral and dorsal auricular surfaces, ossification. • Demonstrate the anatomical position • Identify bony features of pubis and ischium. • Describe the muscular, ligamentous, and capsular attachments. • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 510-516,526,328,329).</p> <p>https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/referenceworkentry/10.1007/978-3-030-43240-9_2</p>
Femur	<ul style="list-style-type: none"> • Demonstrate the anatomical position of bone • Demonstrate different parts • Describe proximal and distal articulations • State angle of femoral torsion. • Demonstrate the anatomical position of bone • Describe muscle attachment and ossification • Discuss fractures with special reference to the fracture of neck of femur in old age. • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 20,435,510,516-518,527,659-660).</p> <p>https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/chapter/10.1007/978-981-13-8468-4_10</p>

<p>Anterolateral Compartment Of Thigh</p>	<ul style="list-style-type: none"> • Describe the origin and insertion of muscles in anteriorlateral compartment of thigh. • Describe the nerves and vessels of anterolateral compartment of thigh • Discuss the femoral triangle and adductor canal with contents • Identify these muscles. • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 510, 545-548,557-558). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/article/10.1186/s10195-023-00691-w</p>
<p>Medial Compartment Of Thigh</p>	<ul style="list-style-type: none"> • Describe the muscles of medial compartment of thigh • Discuss origin, insertion and nerve supply of medial compartment of thigh • Describe the course relations and branches of obturator nerve. • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 548-551). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/article/10.1186/s10195-023-00691-w</p>
<p>Gluteal Region</p>	<ul style="list-style-type: none"> • Tabulate the he various muscles of gluteal region with origin, insertion, action nerve supply. • List various structures undercover of gluteal maximus i.e. muscles, vessels, nerves, bones and joints, ligaments, bursae. • Describe trochanteric anastomosis and cruciate anastomosis. • Enumerate the structures passing through greater sciatic foraman. • Discuss the formation course relations, branches, distribution of sciatic nerve with applied anatomy.. • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 510, 562-563,575-583). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/chapter/10.1007/978-3-030-11033-8_5</p>

<p>Posterior Compartment Of Thigh</p>	<ul style="list-style-type: none"> • Tabulate the Hamstring muscles • Discuss origin insertion, nerve supply and action • Describe the nerves and vessels of posterior compartment of thigh • Discuss course relations distribution and branches of neurovascular structures of posterior compartment • Identify these structures • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 569-572). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/article/10.1186/s10195-023-00691-w</p>
<p>Hip Joint</p>	<ul style="list-style-type: none"> • Describe the type of joint • Describe articular surfaces, • Describe capsular attachments. • Discuss synovial membrane and its folding. • Enlist ligaments and their attachments • Discuss movements possible at hip joint and muscles producing them • Describe blood supply and nerve supply. • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 510-626,629-632,660-661). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/referenceworkentry/10.1007/978-3-030-43240-9_2</p>
<p>Tibia</p>	<ul style="list-style-type: none"> • Identify bone • Demonstrate its side. • Demonstrate its normal anatomical position. • Describe bony features. • Discuss attachment of muscle and ligament • Describe articular surfaces • Identify nutrient foramen • Describe its ossification • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 19, 510,520-521,604). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/chapter/10.1007/978-3-030-93685-3_14 https://link.springer.com/chapter/10.1007/978-3-319-78387-1_69</p>

Fibula	<ul style="list-style-type: none"> • Identify bone • Demonstrate its side. • Demonstrate its normal anatomical position. • Describe bony features. • Discuss attachment of muscleS and ligamentS • Describe articular surfaces • Identify nutrient foramen • Describe its ossification • Correlate the clinical aspects • Read relevant research article • Use digital library 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 20,510,513,521,528,687,790). https://www.youtube.com/watch?v=AeuLBN5ouwo</p> <p>https://link.springer.com/chapter/10.1007/978-3-030-93685-3_14</p> <p>https://link.springer.com/chapter/10.1007/978-3-319-78387-1_69</p>
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Physiology Self Directed Learning (SDL)

Topics Of SDL	Learning Objective	References	Learning Resources
SDL (On Campus): Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle	Discuss the sliding filament model of muscle contraction Describe the structure sarcotubular systemand its importance in muscle contraction	<ul style="list-style-type: none"> • Ganong’s Review of Medical Physiology.25TH Edition.Section 01,Excitable tissue:Muscle (Chapter 05,Page 103) • Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1.Page 36) • Human Physiology by Dee Unglaub Silverthorn. 8TH Edition.Muscle (Chapter 12,Page 413,421) • Physiological Basis of Medical Practice byBest & Taylor’s.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04,page 68) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction ofSkeletal muscle.Section 02. (Chapter 06,Page 81) (Chapter 07, Page 93,97) 	<ul style="list-style-type: none"> • https://www.sciencedirect.com/science/article/abs/pii/0197018687901070 • https://youtu.be/8iklTDlra5Q • https://link.springer.com/article/10.1007/s12551-013-0135-x

Molecular Mechanism of skeletal muscle contraction, Rigor	Define motor unit Discuss recruitment and its effect on force of contraction	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 36) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 413, 421) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04, page 68) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 81) (Chapter 07, Page 93, 97) 	<ul style="list-style-type: none"> • https://youtu.be/RTnKbt2sDf0 • https://youtu.be/NvV2xTrShvg
Molecular Mechanism of skeletal muscle contraction, Rigor mortis, Muscular dystrophies	Define motor unit Discuss recruitment and its effect on force of contraction Discuss Molecular Mechanism of skeletal muscle contraction	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 36) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 413, 421) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04, page 70) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 82, 88) 	<ul style="list-style-type: none"> • https://youtu.be/RTnKbt2sDf0 • https://youtu.be/NvV2xTrShvg
Length tension curve, Load and velocity of	Draw and describe Length duration curve Load and velocity of contraction	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 39) • Human Physiology by Dee Unglaub Silver 	<ul style="list-style-type: none"> • https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=85&ContentID=P00792 • https://www.sciencedirect.com/topics/engineering/length-tension-curve

contraction, diseases of muscle		<p>thorn. 8TH Edition.Muscle (Chapter 12,Page 431,435)</p> <ul style="list-style-type: none"> • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, ,(Chapter 04,page 74) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 91) 	
Energetics, efficiency and types of contraction, heat production in muscle	Elaborate Energetic and efficiency of contraction. Discuss heat production in nerve and muscle	<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 431) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, ,(Chapter 04,page 77,84) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 85,87) 	<ul style="list-style-type: none"> • https://www.sciencedirect.com/topics/engineering/length-tension-curve • https://youtu.be/3ntulKD4kvY
Properties of skeletal muscles, Tetanus & Fatigue	Discuss various properties of skeletal muscle in detail Tetanus and fatigue	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 01,Excitable tissue:Muscle (Chapter 05, Page 110) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 422,424,428) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04,page 74,86) 	<ul style="list-style-type: none"> • https://youtu.be/v5Nm_LaAQVo • https://www.sciencedirect.com/science/article/abs/pii/S2387020622003485

Introduction to CVS	Introduction to Cardiovascular system. Classify blood vessels	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 05,Cardiovascular physiology (Chapter 29, Page 519) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Cardiovascular physiology (Chapter 14,Page 469) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 02, Introduction to Cardiovascular system.(Chapter 05,page 101) 	<ul style="list-style-type: none"> • https://youtu.be/28CYhgjrBLA • https://litfl.com/cardiovascular-physiology-overview/
Physiologic anatomy, types and properties of Smooth Muscle	Enlist type of smooth muscles and explain their characteristics Explain the properties of smooth muscle	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 40) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 436) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Excitation and Contraction of Smooth muscle.Section 02. (Chapter 08, Page 101) 	<ul style="list-style-type: none"> • https://www.kenhub.com/en/library/anatomy/smooth-musculature • https://youtu.be/qEVRoKuo4U
Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential	Describe the physiologic anatomy of myocardium Discuss properties of myocardium Discuss in detail various properties of myocardium Describe the mechanism of production of action potential and its propagation Describe excitation contraction coupling in detail Discuss propagation of electrical activity in cardiac muscle	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 14. Page 131) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 482) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 09, Page 114) 	<ul style="list-style-type: none"> • https://youtu.be/L2Gf9cj7jBw • https://www.sciencedirect.com/topics/medicine-and-dentistry/cardiac-action-potential

Mechanism of smooth muscle contraction & its control	Explain the chemical and physical basis of smooth muscle contraction	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 42) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 439, 443) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Excitation and Contraction of Smooth muscle. Section 02. (Chapter 08, Page 103, 105) 	<ul style="list-style-type: none"> • https://www.kenhub.com/en/library/anatomy/smooth-musculature • https://youtu.be/qEVRoKuo4U
Regulation of myocardial activity	Describe the regulation of pumping activity of heart	<ul style="list-style-type: none"> • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Excitation and Contraction of Smooth muscle. Section 02. (Chapter 09, Page 123) 	<ul style="list-style-type: none"> • https://pubmed.ncbi.nlm.nih.gov/1661829/ • https://www.sciencedirect.com/topics/medicine-and-dentistry/cardiac-action-potential
Comparison of 3 types of muscle	<ul style="list-style-type: none"> • Discuss differences among three types of muscle in detail 	<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 444) 	<ul style="list-style-type: none"> • https://training.seer.cancer.gov/anatomy/muscular/types.html • https://youtu.be/eShBZ3-RxHA
Excitatory & Conducting system of heart	<ul style="list-style-type: none"> • Describe the conductive system of heart in detail • Enlist the various components of conductive system of heart • Describe the mechanism of production of action potential in SA node, AV node, ventricles. also describe its propagation 	<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 488) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 08, page 155, 162) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 02. (Chapter 10, Page 127, 133) 	<ul style="list-style-type: none"> • https://youtu.be/TnFoJ7Hhi-M • https://teachmeanatomy.info/thorax/organs/heart/conducting-system/

Biochemistry Self Directed Learning (SDL)

Topic	Learning Objectives At the end of lecture students should be able to	References
Protein chemistry		
Properties of amino acids & Important peptides	<ul style="list-style-type: none"> • Describe amphoteric properties of amino acids • Discuss Post transitional amino acids and location of amino acids in proteins • Explain Important peptides 	<ul style="list-style-type: none"> • Textbook of Mushtaq 8th Edition Chapter No. 4 pg 97
Proteins	<ul style="list-style-type: none"> • Discuss Importance of proteins • Classify proteins • Describe Functions of proteins 	<ul style="list-style-type: none"> • Textbook of Mushtaq 8th Edition Chapter No. 4 pg 97, 98
Primary structure of proteins	<ul style="list-style-type: none"> • Describe Primary structure of protein • Discuss Peptide bond 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No. 2 pg 14
Secondary structure of proteins	<ul style="list-style-type: none"> • Enlist Types of secondary structure. • Describe Secondary structure of proteins. • Elaborate Significance of secondary structure 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No. 2 pg 16
Tertiary and quaternary structure	<ul style="list-style-type: none"> • Describe Tertiary and quaternary structure of proteins • Understand the forces stabilizing protein structure 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No. 2 pg 19
Protein folding And denaturation	<ul style="list-style-type: none"> • Discuss Folding of proteins • Describe protein misfolding • Interpret the clinical cases related to protein misfolding • Discuss denaturation of proteins 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No. 2 pg 20, 21
Collagen and Elastin	<ul style="list-style-type: none"> • Describe structure of collagen and elastin • Discuss differences between collagen and elastin • Explain Synthesis of collagen • Enlist Factor regulating and helping in strengthening of collagen • Interpret defects of collagen synthesis and elastin 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No. 4 pg 45,97
Techniques for separation of proteins	<ul style="list-style-type: none"> • Describe Techniques for separation of proteins 	<ul style="list-style-type: none"> • Textbook of Mushtaq 8th Edition Chapter No. 4 pg 104

Histology Practicals Skill Laboratory (SKL)

Practical	At The End Of This Skill Lab, Student Should Be Able To Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools
Skeletal muscle	<ul style="list-style-type: none"> • Identify muscle under microscope • Illustrate microscopic structure of muscle • Write two points of identification • Focus the slide 	P C2 C1 P	Skill Lab	OSPE
Cardiac muscle Smooth muscle	<ul style="list-style-type: none"> • Identify muscles under microscope • Illustrate microscopic structure of muscles • Write two points of identification • Focus the slide 	P C2 C1 P	Skill Lab	OSPE
Thick skin	<ul style="list-style-type: none"> • Identify thick skin under microscope • Illustrate microscopic structure of thick skin • Write two points of identification • Focus the slide 	P C2 C1 P	Skill Lab	OSPE
Thin skin	<ul style="list-style-type: none"> • Identify thin skin under microscope • Illustrate microscopic structure of thin skin • Write two points of identification • Focus the slide 	P C2 C1 P	Skill Lab	OSPE

Physiology Practicals Skill Laboratory (SKL)

Practical	At The End Of This Skill Lab, Student Should Be Able To Illustrate:	References
Determination of RBC count	• Apparatus identification	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	
	• Procedure	
	• Recall composition of Diluents	
	• Comprehend	
	• Calculation on hemocytometer	
Determination of TLC	• Recall Normal values	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Apparatus identification	
	• Principle	
	• Procedure	

	<ul style="list-style-type: none"> • Recall composition of Diluents • Comprehend Calculation on hemocytometer • Recall Normal values 	
Determination of Platelet Count	<ul style="list-style-type: none"> • Apparatus identification • Principle • Procedure • Recall composition of Diluents • Comprehend, Calculation on hemocytometer • Recall Normal values 	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
Determination of ABO, Blood groups	<ul style="list-style-type: none"> • Principle • Procedure • Methods • Types of blood groups • Clinical Correlations of blood transfusion 	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail

Biochemistry Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Color tests for detection of proteins	Perform the color tests	P	Skill Lab	OSPE
Detection of proteins by Isoelectric pH	Detect proteins by isoelectric pH	P	Skill Lab	OSPE
Fractional precipitation of proteins	Detect proteins by precipitation reactions (precipitation by full and half saturation with ammonium sulphate)	P	Skill Lab	OSPE
Chromatography	Separate proteins by Chromatography	P	Skill Lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**
- **Longitudinal Themes**
 - **Biomedical Ethics & Professionalism**
 - **Family Medicine**
 - **Artificial Intelligence (Innovation)**
 - **Integrated Undergraduate Research Curriculum (IUGRC)**

**Basic And Clinical Sciences (Vertical Integration)
Case Based Learning (CBL)**

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
Anatomy	• Traumatic Hip dislocation	Apply basic knowledge of subject to study clinical case.	C3
	• Fracture of neck of femur	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Weight Training	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Marfan Syndrome	Apply basic knowledge of subject to study clinical case.	C3
	• Collagen deficiency	Apply basic knowledge of subject to study clinical case.	C3

**Large Group Interactive Sessions (LGIS)
Radiology**

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Radiology of hip bone & Lower Limb	• Interpret normal x-rays of Hip bone & Lower Limb	C2	LGIS	MCQs
	• Discuss features of different Fractures of Hip Bone & Lower Limb	C2		

Biomedical Ethics

Practical Session 1

Affective & Psychomotor Domain

Introduction to Professional Ethics and PM&DC Code of Conduct	<p>Discussion will cover;</p> <ul style="list-style-type: none"> • Introduction to Professional Ethics and PM&DC Code of Conduct • Purpose of medical code of conduct by Regulatory body PM&DC; covering following subtopics <ul style="list-style-type: none"> • What Is the ‘Professional Ethics and Code of Conduct’? • Why to Have the Code of Conduct? • Who Needs to Follow the Code of Conduct? • Who is it for? <p>What Are the Code of Conduct Requirements?</p>	<p>At the end of the session students should be able to</p> <ul style="list-style-type: none"> • Cognizant with need for professional code of conduct by PM&DC. C1 • Elaborate the purpose and relevance for medical code of conduct at undergraduate level . C2 	<p>LGIS</p> <p>1hr contact session in 2-4 parallel classes conducted by Senior faculty</p>	<p>1 MCQs of level C1 to C3 will cover this session teachings in relevant block examination in pool of total 04 MCQs.</p> <p>Result / marks obtained will contribute towards Internal assessment (IA) in 1st Prof. MBBS exam.</p>	<p>PMDC Code of Ethics: http://www.pmdc.org.pk/LinkClick.aspx?fileticket=v5WmQYMVhz4%3D&tabid=102&mid=554</p>
History of Medical Ethics	<p>Discussion on Health Research ethics focusing;</p> <ul style="list-style-type: none"> •Historical perspective of Tuskegee studies, Willow brook Experiment •Codes of medical ethics: traditional foundations and contemporary practice •Nuremburg code, Belmont report, Declaration of Helsinki and importance of historical background of ethics in current research trends • General ethical principles including explanation of 04 basic principles of Beneficence, non-maleficence, respect and justice. <ul style="list-style-type: none"> - Interpretation research ethics for; - Informed consent and confidentiality in research HR 	<p>At the end of the session students should be able to;</p> <ul style="list-style-type: none"> • Explain the meaning of the term “ethics”. C1 • Describe the historical perspective of global development of medical ethics. C1 • Describe the codes of medical ethics and their implications. C1 • Recognize ethical issues relevant to the case situation and apply the ethical codes as appropriate. C2 	<p>LGIS</p> <p>1hr contact session in 2-4 parallel classes, Conducted by Senior faculty.</p>	<p>1 MCQs of level C1 to C3 will cover this session teachings in relevant block examination in pool of total 04 MCQs.</p> <p>Result / marks obtained will contribute towards Internal assessment (IA) in 1st Prof. MBBS exam.</p>	<p>Guidelines and Teachers Handbook for Introducing Bioethics to Medical and Dental Students http://nbcPakistan.org.pk/assets/may-16-bioethics-facilitator-book---may-16%2C-2017.pdf</p> <p>The Nuremburg Code: http://www.hhs.gov/ohrp/archives/nurcode.html</p> <p>10 WMA Declaration of Helsinki: http://www.wma.net/en/30publications/10policies/b3/</p> <p>CIOMS Guidelines: http://www.cioms.ch/publications/layout_guide2002.pdf .</p>

		<ul style="list-style-type: none"> Discuss the development of indigenous ethical codes in the South-East Asian Region. C2. Demonstrate sensitivity to cultural diversity in medical care. C3 			Nuffield Council on Bioethics Guidelines: http://www.sirc.org/news/nuffield.shtml
Laboratory Ethics	<p>Discussion will cover basic elements of Laboratory Ethics focusing;</p> <ul style="list-style-type: none"> Importance of medical professionalism for the medical student; including respect and gratitude towards colleagues Code of conduct: Collaboration, partnership, Teamwork, Maintaining dress code, religion obligations of medical doctor, focus on physicians' character, virtues and duties Delineate the ethical consideration while performing procedures on real patients or simulated patients in Laboratory setting 	<p>At the end of the session students should be able to ;</p> <ul style="list-style-type: none"> Understand the importance of taking permission before performing procedures (drawing blood, administering injections etc.) during laboratory sessions. A1 Show Respects other health professional team members and complete assigned task in professional manner. A1 Employ collaborative negotiation to resolve conflict, anger, confusion and misunderstanding. A2 	<p>Case based discussion in 2 hr contact session in 4-6 parallel classes conducted by faculty of respective departments</p> <p>Role plays</p> <p>Reflective writing</p>	<p>Assignment based assessment under aggregate Marks (Internal Assessment)</p> <p>Assignment to be uploaded on LMS</p>	<ul style="list-style-type: none"> Real life scenarios in form of Case base learning /problem based learning (PBL) To be share with students one week before the session <p>Introduction to criteria for assessment of behavior, code of conduct and professionalism at RMU</p>

Behavioural Sciences

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Rights and Responsibilities of patients and doctors	➤ To be able to identify and differentiate own rights and rights of the patients.	C2	LGIS	MCQS
	• To apply this knowledge in clinical settings	C2	CBL	

Family Medicine

Topic	• At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Communication skills	• To be able to communicate with the patients keeping mind the principle of communication skills	C2	LGIS CBL	MCQS

Integrated Undergraduate Research Curriculum (IUGRC)

Session	Learning Objectives
Students Practical Session 1: (placement in 1 st Module) (work track & assessment by Logbook)	<p>In supervised session, at the end of the session, participants would be able to; (Los)</p> <ol style="list-style-type: none"> 1. Comprehend the “theme and scheme” of IUGRC-1st Year Practical component. 2. Identify their individual role in Poster formation process according to steps of “updated evidence in Health” (UEIH) work. 3. Take leads for broader readings / literature review on boarder areas of UEIH 4. Make account on LMS, how to upload their individual assigned work. 5. Access HEC Digital Library, PERN access. 6. Group work learning protocols
Practical session 2: (placement in 2 nd Module) (work track & assessment by Logbook)	<p>In supervised session, after individual work sharing & supervised brainstorming (PAL) on ideas on broader areas UEIH-Poster formation, students will: (session outlines or Los)</p> <ol style="list-style-type: none"> 1. Identify specific areas of work within the borde area of study done after 1st Practical session. 2. Do earlier discussion on sub-topics to sub-groups on specific area or topic for UEIH for Poster formation. 3. Perform some literature search, retrieval & archiving for detailed study after the CS. 4. Do discussions on assigned work on individual or subgroup basis. 5. Plan mutual sub-group work within group, for their better understanding, supervised by their relevant mentor. 6. Finalize the topic under supervision of supervisor (mentor) for UEIH for Poster formation.

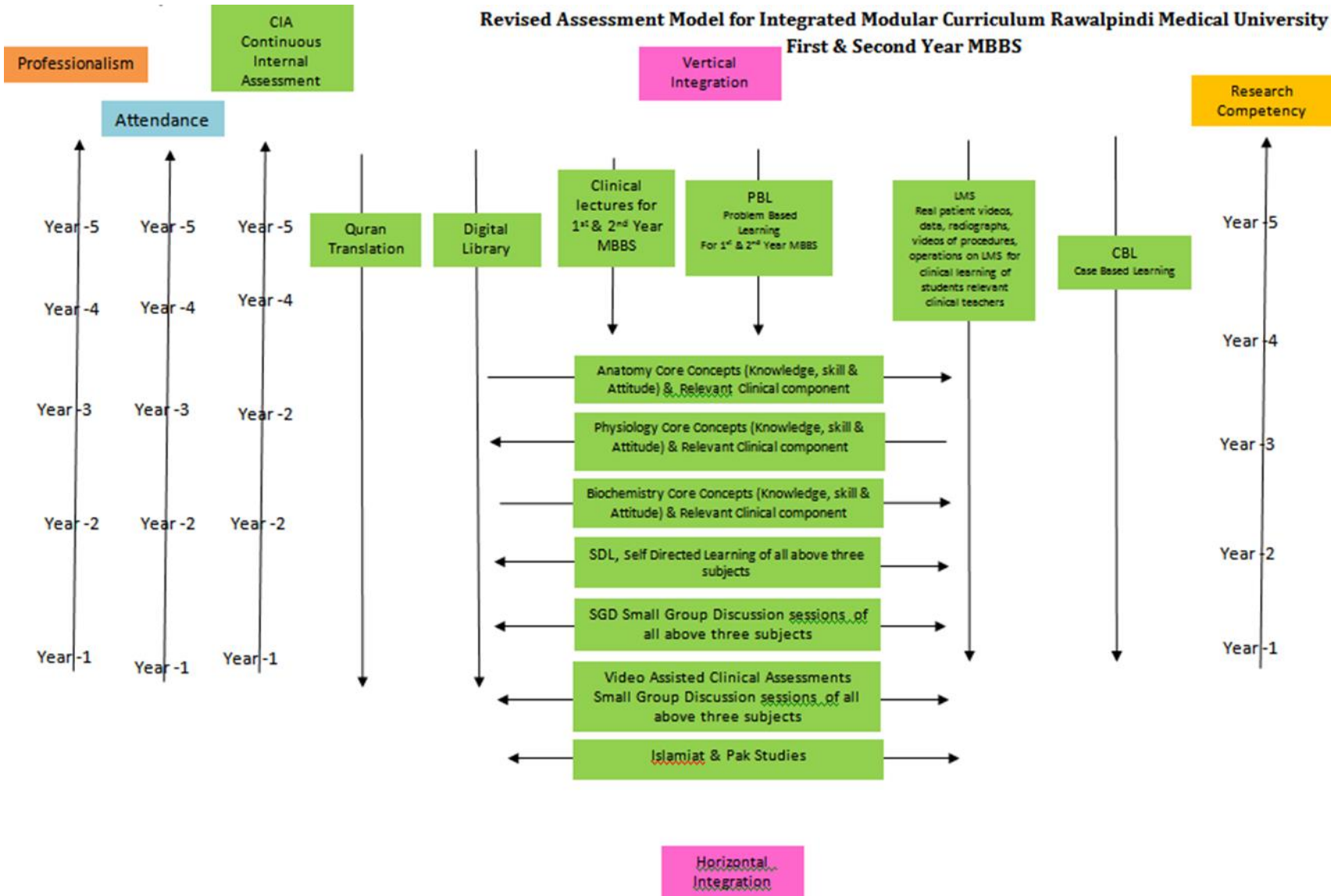
SECTION - IV

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in MSK-II Module**

Revised Assessment Model for Integrated Modular Curriculum Rawalpindi Medical University First & Second Year MBBS



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 - 74%	*75 - 80%	81 - 100%

90% is eligibility criteria for appearing in professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular, modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3 rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given the share according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based), modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in MSK-II

Block	Sr #	Module – 1 MSK-II Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures	Formative	15 Minutes				
	7	Assessment of Bioethics Lectures	Summative	2 Minutes				
	8	Assessment of IUGRC Lectures	Summative	10 Minutes				

Learning Resources

Subject	Resources
Anatomy	<p>A. Gross Anatomy</p> <ol style="list-style-type: none"> 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III <p>B. Histology</p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. <p>C. Embryology</p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	<p>A. Textbooks</p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. <p>B. Reference Books</p> <ol style="list-style-type: none"> 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Harper's Illustrated Biochemistry 32th edition. 2. Lehninger Principle of Biochemistry 8th edition. 3. Biochemistry by Devlin 7th edition.
Community Medicine	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
Pharmacology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Lippincot Illustrated Pharmacology 9th edition. 2. Basic and Clinical Pharmacology by Katzung 5th edition.

SECTION - V

Time Table

Integrated Spiral Clinically Oriented Modular Curriculum for First Year MBBS

MSK-II Module Time Table

First Year MBBS

Session 2022 - 2023

Batch- 50

MSK-II Module Team

Module Name	:	MSK- II Module
Duration of module	:	05 Weeks
Coordinator	:	Dr. Fahd Anwar
Co- Coordinator	:	Dr. Sajjad Hussain
Reviewed by	:	Module Committee

Module Committee		Module task force	
Vice Chancellor RMU	Prof. Dr. Muhammad Umar	Coordinator	Dr. Fahd Anwar
Director DME	Prof. Dr. Rai Muhammad Asghar	DME Focal Person	Dr. Sidra Hamid
Convener Curriculum	Prof. Dr. Naeem Akhter	Co-coordinator	Dr. Sajjad Hussain (Senior Demonstrator of Anatomy)
Chairperson Anatomy & Dean Basic Sciences	Prof Dr. Ayesha Yousaf	Co-Coordinator	Dr. Almas (Senior Demonstrator Biochemistry)
Additional Director DME	Prof. Dr. Ifra Saeed	Co-coordinator	Dr. Fareed Ullah Khan (Senior Demonstrator Physiology) & Clinical Co- Coordinator
Chairperson Physiology	Prof. Dr. Samia Sarwar		
Chairperson Biochemistry	Dr. Aneela Jamil	DME Implementation Team	
		Director DME	Prof. Dr. Rai Muhammad Asghar
Focal Person Anatomy First Year MBBS	Prof Dr. Ayesha Yousaf	Implementation Incharge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
Focal Person Physiology	Dr. Sidra Hamid	Deputy Director DME	Dr. Shazia Zeb
Focal Person Biochemistry	Dr. Aneela Jamil	Module planner & Implementation coordinator	Dr. Sidra Hamid
Focal Person Pharmacology	Dr. Zunera Hakim	Editor	Muhammad Arslan Aslam
Focal Person Pathology	Dr. Asiya Niazi		
Focal Person Behavioral Sciences	Dr. Saadia Yasir		
Focal Person Community Medicine	Dr. Afifa Kulsoom		
Focal Person Quran Translation Lectures	Dr. Fahd Anwar		

Discipline Wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
II	<ul style="list-style-type: none"> Anatomy 	<ul style="list-style-type: none"> Muscles Skin 	<ul style="list-style-type: none"> Development of Axial Skeleton Development of limbs Development of muscles 	General Histology <ul style="list-style-type: none"> Muscles Skin Skin appendages 	Gluteal Region to Lateral compartment of leg
	<ul style="list-style-type: none"> Biochemistry 	<ul style="list-style-type: none"> Protein chemistry, Protein separation techniques, Collagen and Elastin 			
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle. Molecular Mechanism of skeletal muscle contraction, Rigormortis, Muscular dystrophies Introduction to muscle physiology, Structure of sarcomere Energetics, efficiency and types of contraction, heat production in muscle Physiologic anatomy, types and properties of Smooth Muscle Mechanism of smooth muscle contraction & its control Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential Regulation of myocardial activity Comparison of 3 types of Muscle Introduction to CVS Excitatory & Conducting system of heart 			
	<ul style="list-style-type: none"> Bioethics & Professionalism 	<ul style="list-style-type: none"> Introduction to Professional Ethics and PM&DC Code of Conduct History of Medical Ethics 			
	<ul style="list-style-type: none"> Research Club Activity (IUGRC) 	<ul style="list-style-type: none"> Student Practical Session-I Student Practical Session-II 			
	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Communication Skills 			
	<ul style="list-style-type: none"> Behavioural Sciences 	<ul style="list-style-type: none"> Rights and Responsibilities of patients and doctors 			
	<ul style="list-style-type: none"> Radiology & Artificial Intelligence 	<ul style="list-style-type: none"> x-rays of hipbone lower limb 			
	<ul style="list-style-type: none"> Vertical components 	<ul style="list-style-type: none"> The Holy Quran Translation Component 			
	<ul style="list-style-type: none"> Vertical Integration 	<ul style="list-style-type: none"> Clinically co-related lectures 			

Categorization of Modular Content
Department of Anatomy

Category A*	Category B**		Category C***			
Embryology	General Histology	General Anatomy	Demonstrations (SGD)	Practicals/Skill lab. (SKL)	CBL	SDL
<ul style="list-style-type: none"> - Development of Axial Skeleton - Development of limbs - Development of muscles 	<ul style="list-style-type: none"> - Muscles-I - Muscles-II - Skin - Skin - Appendages 	<ul style="list-style-type: none"> - Muscles-I - Muscles-II - Skin 	<p>Gross Anatomy:</p> <ul style="list-style-type: none"> - Hip bone - Femur - Anterolateral compartment of thigh (muscles) - Anterolateral compartment of thigh (neurovascular organization) - Medial compartment of thigh - Gluteal region (muscles) - Gluteal region (neurovascular organization) - Posterior compartment of thigh (muscles) - Posterior compartment of thigh (neurovascular organization) - Hip joint - Tibia - Fibula - Popliteal fossa - Knee joint - Anterior compartment of leg(muscles) - Anterior compartment of leg (neurovascular organization) - Lateral compartment of leg - Surface marking and radiology 	<ul style="list-style-type: none"> - Skeletal muscles - Smooth muscle and cardiac muscle - Thick skin - Thin skin 	<ul style="list-style-type: none"> - Hip Dislocation - Fracture of neck of femur 	<ul style="list-style-type: none"> - Hip bone - Femur - Anterolateral compartment of thigh - Medial compartment of thigh - Gluteal region - Posterior compartment of thigh - Hip joint, Tibia & Fibula

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy department	01
2.	Associate professor of Anatomy department	01
3.	Assistant professor of Anatomy department (AP)	01
4.	Demonstrators of Anatomy department	04

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$2 * 13 = 26$ hours
2.	Small Group Discussions (SGD)	$2 * 21 = 42$ hours
3.	Case Based Learning (CBL)	$2 * 2 = 4$ hours
4.	Practical / Skill Lab	$1.5 * 20 = 30$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$1 * 13 = 13$ hours
2.	Small Group Discussions (SGD)	$2 * 21 = 42$ hours
3.	Case Based Learning (CBL)	$2 * 2 = 4$ hours
4.	Practical / Skill Lab	$1.5 * 4 = 6$ hours
5.	Self-Directed Learning (SDL)	$1 * 8 = 8$ hours

Department of Physiology

Category A	Category B	Category C
Sarcotubular system, excitation contraction coupling mechanism inskeletal muscle (Prof. Dr. Samia Sarwar/Dr Aneela) (Even)	Introduction to pericardium Properties of myocardium & endocardium,myocardial action potential (By Dr. Sidra)	Length tension curve, Load and velocity of contraction, diseases of muscle (By Dr. Nayab)
		Properties of skeletal muscles, Tetanus & Fatigue (By Dr. Nayab)
Molecular Mechanism of skeletal muscle contraction, Rigormortis, Muscular dystrophies (Prof. Dr. Samia Sarwar/ Dr Aneela) (Even)	Regulation of myocardial activity (By Dr Sidra)	Practical: <ol style="list-style-type: none"> 1. Determination of RBC count 2. Determinati on of TLC 3. Determination of Platelet Count 4. Determination of ABO, Blood groups
	Introduction to muscle physiology, Structure of sarcomere (By DrAneela) (Even)	SGD: <ol style="list-style-type: none"> 1. Sliding filaments of skeletal muscle, sarcotubular system 2. Physiology of smooth muscle, mechanism of smooth muscle contraction 3. Properties of myocardium, myocardial action potential, Excitatory and conduction system of heart 4. Comparison of three types of muscle
	Physiologic anatomy, types and properties of Smooth Muscle (ByDr Aneela)	SDL: (ON CAMPUS) <ol style="list-style-type: none"> 1. Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle 2. Molecular Mechanism of skeletal muscle contraction, Rigor mortis, Muscular dystrophies 3. Length tension curve, Load and velocity of contraction, diseases of muscle 4. Physiological properties and types of Smooth Muscle 5. Mechanism of smooth muscle contraction & its control 6. Regulation of myocardial activity 7. Excitatory & Conducting system of heart 8. Comparison of 3 types of muscle
	Mechanism of smooth muscle contraction & its control (By DrAneela)	
	Comparison of 3 types of Muscle (By Dr Aneela)	

	Introduction to muscle physiology, Structure of sarcomere (By Dr Uzma) (Odd)	SDL: (OFF CAMPUS) 1. Introduction to muscle physiology, Structure of sarcomere 2. Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle 3. Mechanism of skeletal muscle contraction. 4. Rigor mortis, Muscular dystrophies 5. Energetics, efficiency and types of contraction 6. Properties of skeletal muscles, Tetanus & Fatigue 7. Physiological properties of Smooth Muscle 8. Myocardial Action potential
	Sarcotubular system, excitation contraction coupling mechanism inskeletal muscle (By Dr Uzma) (Odd)	
	Molecular Mechanism of skeletal muscle contraction , Rigormortis, Muscular dystrophies (By Dr Uzma)(Odd)	
	Energetics, efficiency and types of contraction, heat production in muscle (By Dr Uzma)	
	Introduction to CVS (By Dr Fahad)	
	Excitatory & Conducting system of heart (By Dr Fahad)	PBL=NIL CBL=NIL

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Physiology department	01
2.	Associate professor of Physiology department	01
3.	Assistant professor of Physiology department (AP)	01 (DME)
4.	Demonstrators of Physiology department	07

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$13 * 2 = 26$ hours
2.	Small Group Discussions (SGD) / (CBL)	$20 * 1.5 = 30$ hours
3.	Practical / Skill Lab	$20 * 1.5 = 30$ hours

Department of Biochemistry

Category A*	Category B**	Category C***				
LGIS	LGIS	PBL	CBL	Practical's	SGD	
Protein folding and denaturation	Properties of amino acids and important peptides		Protein folding and misfolding	<ul style="list-style-type: none"> • Color tests for detection of proteins 	Protein structure	
	Classification of protein and function of protein			<ul style="list-style-type: none"> • Detection of proteins by Isoelectric pH 		
	Primary structures of proteins			Fractional precipitation of proteins	Collagen	
Collagen and elastin	Secondary structure of protein			Chromatography	Elastin	
Techniques of separation of protein	Tertiary and quaternary structure of proteins					

Category A*: By HOD and Assistant Professor

Category B:** By All (HOD, Assistant Professors, Senior Demonstrators)

Category C*:** By All Demonstrators

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation Of Teaching Staff / Human Resource	Total Number Of Teaching Staff
1.	Assistant Professor of Biochemistry department	02
2.	Demonstrators of biochemistry department	08

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$8 * 1 = 5$ hours
2.	Small Group Discussions (SGD)	$1.5 * 4 = 6$ hours
3.	Case Based Learning (PBL)	$2 * 1 = 2$ hours
4.	Practical / Skill Lab	$1.5 * 04 = 6$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	8
2.	Small Group Discussions (SGD)	6
3.	Case Based Learning (PBL)	02
4.	Practical / Skill Lab	6
5.	Self-Directed Learning (SDL)	08

Time Table For Module MSK-II (First Week)
(15-05-2023 To 20-05-2023)

Date/Day	8:00 AM – 09:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM	11:00 AM – 12:00 PM	12:00 PM – 12:20 PM	12:20 PM – 2:00 PM	02:00- 03:00PM	
Monday 15-05-2023	Viva Voce of Block-I (Foundation + MSK-II)					B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Intro. to muscle physiology, structure of sarcomere
Tuesday 16-05-2023	Integrated + Gross OSPE						Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle
Wednesday 17-05-2023	SGD/Dissection	Anatomy LGIS		Physiology LGIS			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Classification of proteins
	Hip bone	General Anatomy Muscle I Asst. Prof. Dr Arsalan Even	General Histology Muscle I Assoc. Prof. Dr Mohtasham Odd	Introduction to muscle physiology, Structure of sarcomere Dr Aneela (Even)	Introduction to muscle physiology, Structure of sarcomere Dr. Uzma (Odd)			
Thursday 18-05-2023		CBL/Dissection	Anatomy LGIS		Biomedical Ethics		Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Introduction to proteins and amino acids
	Hip bone	General Histology Muscle I Assoc. Prof. Dr Mohtasham Even	General Anatomy Muscle I Asst. Prof. Dr Arsalan Odd	Introduction to Professional Ethics and PM&DC Code of Conduct Dr. Aneela Even Dr. Kashid Odd				
Friday 19-05-2023		8:00 AM – 09:00 AM	9:00 AM – 10:00 AM	Biochemistry LGIS		Practical & SGD/CBL Topics & venue mentioned at the end	12:00 PM – 01:00PM SDL Anatomy Hip bone	
	CBL / Dissection	Anatomy LGIS		Collagn structure, synthesuis and related disorders				
		General Anatomy Muscle II Asst. Prof. Dr Arsalan Even	General Histology Muscle II Assoc. Prof. Dr Mohtasham Odd		Properties of amino acids & important peptides Dr. Rahat Even			
Saturday 20-05-2023	SGD / Dissection	Biochemistry LGIS		Physiology LGIS		Break	Practical & SGD/CBL Topics & venue mentioned at the end	
	Femur / Patella	Collagn structure, synthesuis and related disorders Dr. Isma Even	Properties of amino acids & important peptides Dr. Rahat Odd	Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle Prof.Dr. Samia Sarwar/ Dr Aneela (Even)	Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle Dr. Uzma (Odd)			

Topics For Practical with Venue						Topics For Small Group Discussion& CBLs With Venue				
<ul style="list-style-type: none"> Anatomy Histology Practical: Skeletal Muscles Physiology Practical: Determination of Red blood cell count Biochemistry Practical: Color tests for detection of proteins 						<ul style="list-style-type: none"> Physiology SGD: Sliding filaments of skeletal muscle, sarcotubular system (Lecture Hall 5) Biochemistry SGD: Protein structure 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	1-90	Dr Urooj Shah	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	91-180	Dr Zeneera Saqib	Lecture Hall No.04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	181-270	Dr Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C	D	271 onwards	Dr Qurat ul Ain	New Lecture theatre complex no.3	
Saturday	A	E	C	D	B					
Venue For First Year Batches for PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue						Biochemistry	Physiology	
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq	1.	A	1-70	Dr. Almas Ijaz	Dr. Sheena Tariq	
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani	2.	B	71-140	Dr. Rahat Afzal	Dr Uzma Kiyani	
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar	3.	C	141-210	Dr. Romessa	Dr fahd Anwar	
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah	4.	D	211-280	Dr Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish	
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)	5.	E	281 onwards	Dr. Nayab Ramzan	Dr Fareed	
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)	Venues for Large Group Interactive Session (LGIS) and SDL					
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)	Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03		
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)	Even Roll Number			New Lecture Hall Complex Lecture Theater # 02		
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Time Table For Module MSK-II (Second Week)
(22-05-2023 To 27-06-2023)

S P O R T S W E E K

Time Table For Module MSK-II (Third Week)
(29-05-2023 To 03-06-2023)

Date/Day	8:00 AM – 09:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM	11:00 AM – 12:00 PM	12:00 PM – 12:20 PM	12:20 PM – 2:00 PM	02:00- 03:00PM	
Monday 29-05-2023	SGD / Dissection		Anatomy LGIS		Physiology LGIS		B r e a k	
	Anterolateral compartment of thigh (Muscles & Neurovascular organization)		General Embryology	General Histology	Molecular Mechanism of skeletal muscle contraction	Molecular Mechanism of skeletal muscle contraction		
			Development of Axial Skeleton	Histology of Skin	rigor mortis, Muscular dystrophies	rigor mortis, Muscular dystrophies		
Prof. Dr Ayesha Even			Assoc. Prof. Dr Mohtasham Odd	Prof .Dr.Samia Sarwar/ Dr. Aneela (Even)	Dr. Uzma(Odd)			
Tuesday 30-05-2023	SGD / Dissection	Anatomy LGIS		Biochemistry LGIS		Physiology LGIS		
	Dissection	General Histology Muscle II	General Anatomy Muscle II	Classification and functions of proteins	Elastin structure and related disorders	Length tension curve, Load and velocity of contraction, diseases of muscle		Energetics, efficiency and types of contraction, heat production in muscle
		Assoc. Prof. Dr Mohtasham Even	Asst. Prof. Dr Arsalan Odd	Dr. Rahat Even	Dr. Isma Odd	Dr. Nayab Even	Dr. Uzma Odd	
Wednesday 31-05-2023	SGD / Dissection		Biochemistry LGIS		Physiology LGIS		B r e a k	
	Medial Compartment of thigh		Elastin structure and related disorders	Classification and functions of proteins	Energetics, efficiency and types of contraction, heat production in muscle	Length tension curve, Load and velocity of contraction, diseases of muscle		
			Dr. Isma Even	Dr. Rahat Odd	Dr. Uzma Even	Dr. Nayab Odd		
SGD / Dissection			Anatomy LGIS		Research Club Activity			
Thursday 01-06-2023	Dissection		General Histology	General Embryology	Student Practical Session-I Leacture Hall Complex No. 2			B r e a k
			Histology of Skin	Development of Axial Skeleton				
			Assoc. Prof. Dr MohtashamEven	Prof. Dr Ayesha Odd	Dr. Khaula Noreen & Dr. Gul Maher Research Team-I (Roll no 1-180) NLC 2	Prof. Dr. Arshad & Assit. Prof. Dr Afifa Research Team-I (Roll no 181-onwards) NHC 3		
			SGD / Dissection		Anatomy LGIS		Quran Translation	
Friday 02-06-2023	Gluteal Region (muscles)		General Histology	General Embryology	Imaniat-I	Ibadat-II	B r e a k	
			Histology of Skin appendages	Development of limbs				
			Assoc. Prof. Dr MohtashamEven	Prof. Dr Ayesha Odd	Mufti Naeem Sherazi Even	Molana Abdul Waahid Abbasi Odd		
Saturday 03-06-2023	SGD / Dissection		Anatomy LGIS		Biochemistry LGIS		B r e a k	
	Gluteal Region (Neurovascular organization)		General Embryology	General Histology	Protein folding and misfolding	Primary protein structure		
			Development of limbs	Histology of Skin appendages				
			Prof. Dr Ayesha Even	Assoc. Prof. Dr Mohtasham Odd	Dr. Isma (Even)	Dr. Rahat Odd		
SGD / Dissection			Anatomy LGIS		Biochemistry LGIS			

Topics For Practical With Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> Anatomy Histology Practical: Smooth and cardiac muscles Physiology Practical: Determination of Total leukocyte Count (TLC) Biochemistry practical: Detection of proteins by Isoelectric pH 						<ul style="list-style-type: none"> Physiology SGD: Physiology of smooth muscle, mechanism of smooth muscle contraction (Lecture Hall 5) Biochemistry CBL: Protein folding and misfolding 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	1-90	Dr Urooj Shah	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	91-180	Dr Zeneera Saqib	Lecture Hall No.04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	181-270	Dr Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C	D	271 onwards	Dr Qurat ul Ain	New Lecture theatre complex no.3	
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq		1.	A	1-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani		2.	B	71-140	Dr. Rahat Afzal	Dr Uzma Kiyani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar		3.	C	141-210	Dr. Romessa	Dr fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah		4.	D	211-280	Dr Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	E	281 onwards	Dr. Nayab Ramzan	Dr Fareed
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)		Venues for Large Group Interactive Session (LGIS) and SDL				
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03	
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02	
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Time Table For Module MSK-II (Fourth Week)
(05-06-2023 To 10-06-2023)

Date/Day	8:00 AM – 9:00 AM	10:00AM – 11:00AM	11:00 AM – 12:00 PM	12:00 PM – 12:20 PM	12:20 PM – 2:00 PM	02:00- 03:00PM	
Monday 05-06-2023	SGD / Dissection	Anatomy LGIS		Physiology LGIS		B r e a k	
	Dissection	General Embryology		Properties of skeletal muscles, Tetanus & Fatigue	Introduction to CVS		
		Development of Muscles Prof. Dr Ayesha Even	General Anatomy of Skin Asst. Prof. Dr Arsalan Odd				Dr. Nayab Even	Dr. Fahd Odd
Tuesday 06-06-2023	SGD / Dissection	Biochemistry LGIS		Physiology LGIS		Practical & SGD/CBL Topics & venue mentioned at the end	
	Posterior compartment of thigh (muscles)	Primary protein structure Dr. Rahat Even	Protein folding and misfolding Dr. Isma (odd)	Introduction to CVS Dr. Fahd Even	Properties of skeletal muscles, Tetanus & Fatigue Dr. Nayab Odd		SDL Physiology Energetics, efficiency, and types of contraction
Wednesday 07-06-2023	SGD / Dissection	Anatomy LGIS		Biochemistry LGIS		Muscle Biochemistry Protein misfolding disorders Online SDL Evaluation	
	Posterior compartment of thigh (Neurovascular organization)	General Anatomy General Anatomy of Skin Asst. Prof. Dr Arsalan Even	General Embryology Development of Muscles Prof. Dr Ayesha Odd	Secondary protein structure Dr. Rahat Even	Protein separation techniques Dr. Isma Odd		
Thursday 08-06-2023	SGD / Dissection	Research Club Activity				Practical & SGD/CBL Topics & venue mentioned at the end	
	Dissection	Student Practical Session-II Lecture Hall Complex No. 3					
		Dr. Khaula Noreen Research Team-I(roll no 1-180) NLC 2		Dr. Gul Maher Research Team-I (roll no 181-ONWARDS) NLC 3			
Friday 09-06-2023	CBL/ Dissection	9:00AM – 10:00AM		Quran Tranlation		12:00 PM – 01:00PM SDL Anatomy Gluteal Region	
	Tibia	Biochemistry LGIS		Ibadat-II Mufti Naeem Sherazi Even	Imaniat -I Molana Abdul Waahid Abbasi Odd		
		Protein separation techniques Dr. Isma Even	Secondary protein structure Dr. Rahat Odd				Immaniat-II Mufti Naeem Sherazi Even	Ibadat-III Molana Abdul Waahid Odd
Saturday 10-06-2023	SGD / Dissection	Biochemistry LGIS		Biomedical Ehtics		12:00PM-12:20PM Break	
	Hip joint	Protein folding & denaturation Dr. Isma Riaz even	Tertiary and quaternary structure Dr. Rahat odd	History of Medical Ethics			
				Dr. Arsalan Even	Dr. Maria Odd		
					Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Posterior compartment of thigh Online Clinical evaluation	

Topics For Practical With Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> Anatomy Histology Practical: Thick Skin Physiology Practical: Determination of platelet count Biochemistry Practical: Fractional precipitation of proteins 						Physiology SGD: Properties of myocardium, myocardial action potential, Excitatory and conduction system of heart (Physiology Lecture 05) Biochemistry SGD: Collagen				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	1-90	Dr Urooj Shah	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	91-180	Dr Zeneara Saqib	Lecture Hall No.04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	181-270	Dr Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C	D	271 onwards	Dr Qurat ul Ain	New Lecture theatre complex no.3	
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue						Biochemistry	Physiology	
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq	1.	A	1-70	Dr. Almas Ijaz	Dr. Sheena Tariq	
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani	2.	B	71-140	Dr. Rahat Afzal	Dr Uzma Kiyani	
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar	3.	C	141-210	Dr. Romessa	Dr fahd Anwar	
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah	4.	D	211-280	Dr Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish	
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)	5.	E	281 onwards	Dr. Nayab Ramzan	Dr Fareed	
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)	Odd Roll Numbers			New Lecture Hall Complex Lecture # 03		
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)	Even Roll Number			New Lecture Hall Complex Lecture Theater # 02		
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Time Table For Module MSK-II (Fifth Week)
(12-06-2023 To 17-06-2023)

Date/Day	8:00 AM – 09:00 AM	9:00 AM – 10:00 AM	10:00 AM – 11:00 AM	11:00 AM – 12:00 PM	12:00 PM – 12:20 PM	12:20 PM – 2:00 PM	02:00- 03:00PM		
Monday 12-06-2023	SGD / Dissection		Biochemistry LGIS	Physiology LGIS		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Physiological properties of Smooth Muscle	
	Fibula		Tertiary and quaternary structure	Protein folding & denaturation	Physiologic anatomy, types and properties of Smooth muscle				Introduction to pericardium Properties of myocardium & endocardium myocardial action potential
Tuesday 13-06-2023	SGD / Dissection		Behavioural Sciences	Physiology LGIS			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Myocardial Action potential	
	Popliteal Fossae		Communication Skills	Introduction to pericardium Properties of myocardium & endocardium myocardial action potential	Physiologic anatomy, types and properties of Smooth muscle				
Wednesday 14-06-2023	SGD / Dissection		Behavioural Sciences (LGIS)	Physiology LGIS			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Importance of various classes of protein	
	Knee joint		Rights and Responsibilities of patients and doctors	Mechanism of smooth muscle contraction & its control	Regulation of myocardial activity				
Thursday 15-06-2023	SGD / Dissection		Radiology	Physiology LGIS			Practical & SGD/CBL Topics & venue mentioned at the end	SDL lastin and related disorders	
	Anterior compartment of leg (muscles and neurovascular organization)		x-rays of hipbone lower limb	Regulation of myocardial activity	Mechanism of smooth muscle contraction & its control				
Friday 16-06-2023	SGD/ Dissection	Quran Tranlation		Physiology LGIS		12:00 PM – 01:00PM	SDL Anatomy Tibia, Fibula		
	Lateral compartment of leg (muscles and neurovascular organization)	Ibadat-III	Immaniat-II	Ibadat-IV	Immaniat-III	Excitatory & Conducting system of heart		Comparison of 3 types of muscle	
Saturday 17-06-2023	SGD / Dissection		Dissection		Physiology LGIS		12:00 PM-12:20 PM	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Hip joint, Knee Joint
	Surface Anatomy / Radiology		Dissection		Comparison of 3 types of muscle	Excitatory & Conducting system of heart			
				Dr. Aneela Even	Dr. Fahd Odd	Break			

Topics For Practical With Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> Anatomy Histology Practical: Thick Skin Physiology Practical: Determination of ABO, Blood groups Biochemistry Practical: Chromatography 						Physiology SGD: Comparison of three types of muscle (Physiology Lecture 05) Biochemistry SGD: Elastin				
Schedule for Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	1-90	Dr Urooj Shah	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	91-180	Dr Zeneera Saqib	Lecture Hall No.04 Anatomy Lecture Hall	
Wednesday	E	D	B	C	A	C	181-270	Dr Ali Raza	Dissection Hall	
Thursday	B	A	D	E	C	D	271 onwards	Dr Qurat ul Ain	New Lecture theatre complex no.3	
Saturday	A	E	C	D	B					
Venue For First Year Batches for PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq		1.	A	1-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani		2.	B	71-140	Dr. Rahat Afzal	Dr Uzma Kiyani
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)		Dr. Fahd Anwar		3.	C	141-210	Dr. Romessa	Dr fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah		4.	D	211-280	Dr Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
Batch-C1	(141-175)	Lecture Hall no.04 (Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	E	281 onwards	Dr. Nayab Ramzan	Dr Fareed
Batch-C2	(176-210)	Lecture Hall no.05 (Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)		Venues for Large Group Interactive Session (LGIS) and SDL				
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03	
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02	
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Time Table For Module MSK-II (Sixth Week)
(19-06-2023 To 24-06-2023)

Date & Day	8:00 AM – 9:00 AM	11:00AM – 12:00 PM
Monday 19-06-2023	SDL For Exam Preparation	
Tuesday 20-06-2023	Anatomy Theory Paper	
Wednesday 21-06-2023	Physiology theory Paper	
Thursday 22-06-2023	Biochemistry Theory paper& Allied	
Friday 23-06-2023	Anatomy Viva Voce (Roll no :1-180 students) & Physiology Viva Voce (Roll no :181 to 322 students)	
Saturday 24-06-2023	Physiology Viva Voce (Roll no :1-180 students) & Anatomy Viva Voce (Roll no :181 to 322 students)	

SECTION VI

Table of Specification (TOS) For MSK-II Module Examination for First Year MBBS

Sr. #	Discipline	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Viva voce/OSPE	Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3		
1.	Anatomy	25	15	5	5	5	25	1	2	2	50	100
2.	Physiology	30	18	9	3	4	20	1	1.5	1.5	50	100
3.	Biochemistry	7	4	3	-	3	15	1	1	1	5	29
4.	Bioethics & Professionalism	5										5
5.	Research Club Activity (IUGRC)	10										6
6.	Family Medicine	1										1
7.	Behavioural Sciences	2										2
8.	Radiology & Artificial Intelligence Innovation	3										3
Grand Total											246	

Annexure-I

(Sample MCQ & SEQ papers)

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
1st Year MBBS MCQs Module Exam (MSK-II)

1. A 50-years-old man complaint of a lump in his groin. His physician suspected enlarged superficial inguinal lymph nodes. Which area should be examined to find the source?
 - a. Skin of the buttocks
 - b. Skin of the scrotum
 - c. Both skin of buttocks and scrotum
 - d. Glans penis
 - e. Posterolateral part of calf
3. A football player presented in emergency with injury. The doctor tested his knee by pulling anteriorly on the leg with knee flexed. The leg moved forward significantly due to the damage of?
 - a. Anterior Cruciate Ligament
 - b. Medical Meniscus
 - c. Lateral Meniscus
 - d. Oblique Poptiteal Ligament
 - e. Posterior Cruciate Ligament
5. A cardiac patient was advised to undergo coronary artery grafting. From which of following vein graft can be used as in this procedure.
 - a. Femoral vein
 - b. Perforating vein
 - c. Great saphenous vein
 - d. Small saphneous vein
 - e. Popliteal vein
2. A 52-years-old woman fell after slipping and was unable to extend her leg at the knee joint. Which of the following muscles were most likely to be damaged as a result of this accident?
 - a. Semitendinosus
 - b. Sartorius
 - c. Gracilis
 - d. Quadriceps femoris
 - e. Biceps femoris
4. While observing a patient walking a doctor noticed a tilt in the pelvis towards right. Which nerve could be impacted in this scenario.
 - a. Right superior gluteal nerve
 - b. Right superior gluteal nerve
 - c. Right inferior gluteal nerve
 - d. Right inferior gluteal nerve
 - e. Right femoral nerve

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
1st Year MBBS SEQs Module Exam (MSK-II)

Note: Attempt all questions. All questions carry equal marks. Draw diagram where necessary

1. a. Name the opening present in upper mid part of fascia lata of thigh. Give location and margins of opening. Enlist structures passing through it? 0.5+0.5+0.5+1.5
b. Name arteries contributing in anastomosis around lesser trochanter of femur. 2
2. a. Name the opening present in upper mid part of fascia lata of thigh. Give location and margins of opening. Enlist structures passing through it? 0.5+0.5+0.5+1.5
b. Name arteries contributing in anastomosis around lesser trochanter of femur. 2
3. a. A patient walked in OPD with waddling gait. On examination his pelvis tilted towards unsupported side when he was asked to raise his leg.
 - I. Which nerve is damaged 1
 - II. Enlist muscles that are damaged 1
 - III. Explain the mechanism behind this clinical condition 1.5b. Discuss unhappy triad of knee 1.5

RAWALPINDI MEDICAL UNIVERSITY, RWP
PHYSIOLOGY DEPARTMENT
1st Year MBBS MCQs Module Exam (MSK-II)

1. Stress relaxation is the characteristic feature of:
 - a. Slow oxidative skeletal muscle fibres
 - b. Smooth muscle
 - c. Cardiac muscle
 - d. Fast oxidative skeletal muscle fibres
 - e. Fast glycolytic skeletal muscle fibres

2. The attachment –detachment cycling of the myosin head with the actin filament requires the following chemical change in regulatory protein chains:
 - a. Phosphorylation
 - b. Hydroxylation
 - c. Oxidation
 - d. Methylation
 - e. Carboxylation

3. The enzyme important for cessation of smooth muscle contraction is:
 - a. Creatine Kinase
 - b. Myosin phosphatase
 - c. Myosin Light chain kinase
 - d. ATPase
 - e. Hyaluronidase

4. The following connections are present between autonomic nerve fibers and multi –unit smooth muscle fibres:
 - a. Gap junctions
 - b. Tight junctions
 - c. Contact junctions
 - d. Desmosomes
 - e. Hemidesmosomes

5. Prolonged holding of contractions of smooth muscle is facilitated by:
 - a. Stress Relaxation
 - b. Latch mechanism
 - c. The walk –along mechanism
 - d. Excitation-contraction coupling
 - e. Reverse stress relaxation

RAWALPINDI MEDICAL UNIVERSITY, RWP
PHYSIOLOGY DEPARTMENT
1st Year MBBS SEQs Module Exam (MSK-II)

- Q.1 A young male athlete was fond of going to gym for body building. He was using energy drinks and special protein supplements to increase his muscle endurance. He was mainly interested in power lifting exercises.
- a. Which type of skeletal muscle contraction he was doing predominantly? **(1)**
 - b. Name the type of skeletal muscle fibers involved in causing this type of contraction. **(1)**
 - c. Differentiate between the two types of skeletal muscle fibers. **(3)**
- Q.2 A 65-year-old male presented with burning micturition, increased urinary frequency, and nocturia. His Urine R/E showed numerous pus cells and he was diagnosed to be suffering from urinary tract infection.
- a. Name the type of smooth muscle present in the wall of urinary bladder & type of its innervation. **(0.5,0.5)**
 - b. Briefly write about the Latch phenomenon & its significance. **(2,2)**
- Q.3 During postmortem of 38-year-old male the examining doctor observed stiffness of muscles and joints of the deceased.
- a. Name this condition which has been developed after death. **(1)**
 - b. What is the molecular basis of this condition? **(3)**
 - c. What is the medicolegal importance of muscle stiffness after death? **(1)**
- Q.4 A 45-year-old male presented in emergency department of Rawalpindi Institute of Cardiology with severe bradycardia and fainting attack.
- a. Name the normal pacemaker of the heart. **(0.5)**
 - b. Briefly write the molecular mechanism of the normal pacemaker potential. **(3)**
 - c. Draw & label excitatory & conductive system of the heart. **(1.5)**
- Q.5 Draw a flow chart elaborating the excitation-contraction coupling mechanism for skeletal muscle. **(5)**

RAWALPINDI MEDICAL UNIVERSITY, RWP
BIOCHEMISTRY DEPARTMENT
1st Year MBBS SEQs Module Exam (MSK-II)

1. Each turn of α -helix contains the amino acid residues:
 - a. 3.0
 - b. 3.6
 - c. 4.2
 - d. 4.5
 - e. 4.8
2. One of the following proteins is chromoprotein as well as metalloprotein
 - a. Ferritin
 - b. Albumin
 - c. Myoglobin
 - d. Hemoglobin
 - e. Transferrin
3. In protein structure, alpha helix and beta sheets are examples of:
 - a. Primary structure
 - b. Secondary structure
 - c. Tertiary structure
 - d. Quaternary structure
 - e. Protein folding
4. Disulfide bond is formed between sulfhydryl groups of
 - a. Alanine
 - b. Methionine
 - c. Cysteine
 - d. Valine
 - e. Proline

SEQ

Q. a. Describe secondary structure of proteins with at least two suitable examples. 03

b. Discuss causes of protein misfolding. 02

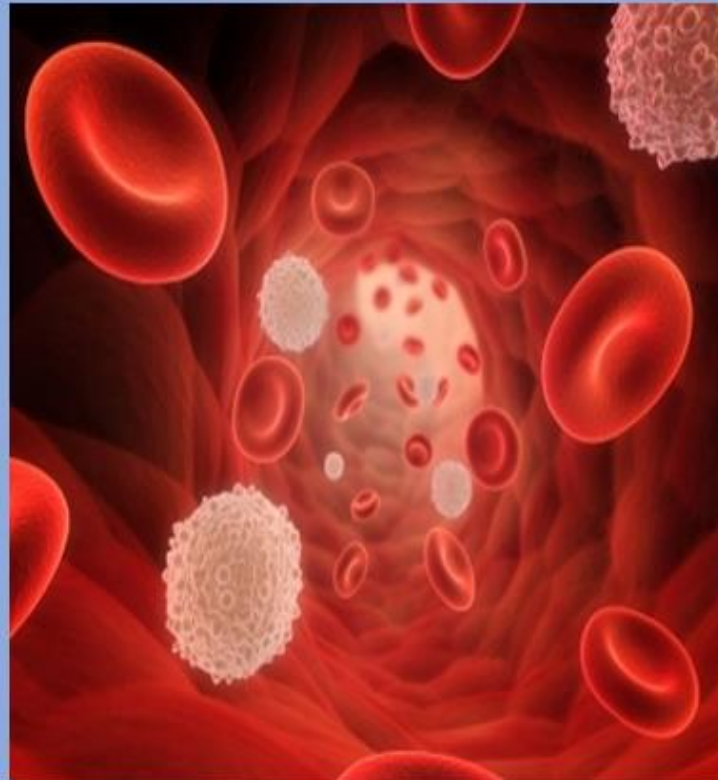
RAWALPINDI MEDICAL UNIVERSITY
1ST YEAR MBBS BIOETHICS MCQs EXAM


1. ---Includes rules of conduct that may be used to regulate our activities concerning the biological world.
 - a. Bio-piracy
 - b. Biosafety
 - c. Bioethics
 - d. Bio-patents
 - e. Bio-logistic
2. The right of patients having self-decision is called.
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
3. Following is not code of ethics.
 - a. Integrity
 - b. Objectivity
 - c. Confidentiality
 - d. Behaviour
 - e. Autonomy
4. -----in the context of medical ethics, if it's fair and balanced
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
5. -----Principle requiring that physicians provide, positive benefits
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity



Blood & Immunity Module

Study Guide
First Year MBBS 2022 - 2023



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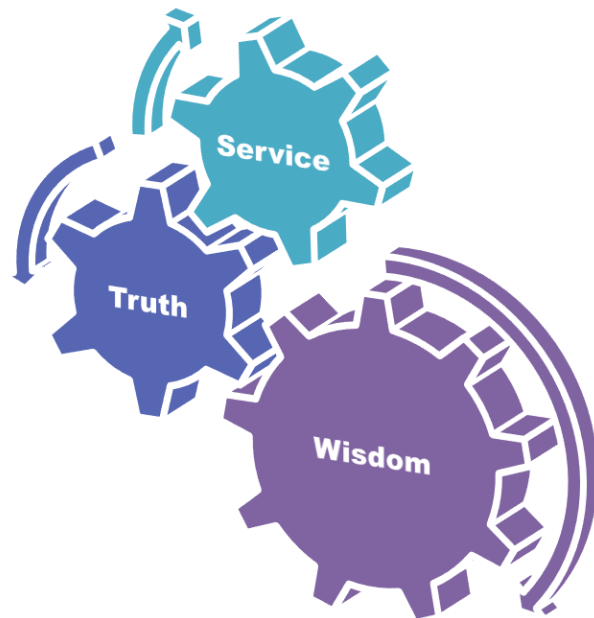
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University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

First Year MBBS 2023

Study Guide

Blood and Immunity Module

Discipline wise Details of Modular Contents

Block	Subjects	Embryology	Histology	Gross Anatomy	CBL	SDL
II	• Anatomy	<ul style="list-style-type: none"> • Development of pharyngeal arches • Development of spleen • Development of thymus 	<ul style="list-style-type: none"> • Spleen • Thymus • Lymph nodes • Tonsils 	<p style="text-align: center;">Lower Limb</p> <ul style="list-style-type: none"> • Posterior compartment of leg to foot 	<ul style="list-style-type: none"> • Ankle sprain • Flat foot 	<ul style="list-style-type: none"> • Posterior compartment of leg and flexor retinaculum • Neurovascular organization of posterior compartment of leg • Foot joints • Ankle joints • Sole of foot • Spleen • Gait cycle
	• Physiology	<ul style="list-style-type: none"> • Plasma Proteins • Stages of erythropoiesis & factors affecting erythropoiesis • Hemoglobin & Hemoglobinopathies, Iron Metabolism • Red cell fragility, ESR & Red cell indices, Anemia & polycythemia • Fate of RBCs & Jaundice • Types of immunity, Physiology of innate immunity tolerance & auto immunity • Physiology of acquired immunity B-Cells • Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS • Composition of blood & Hemopoiesis • WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties • Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) • Blood coagulation • Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia) • Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body) • Physiological mechanism of temperature regulation • Role of Hypothalamus in temperature regulation • Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) • ABO & Rh Blood grouping system • Rh Blood grouping system and Erythroblastosis fetalis • Blood transfusion hazards • Tissue and organ transplantations 				
	• Biochemistry	<ul style="list-style-type: none"> • Heme synthesis • Porphyria 				

	<ul style="list-style-type: none"> • Breakdown of hemoglobin • Jaundice • Blood • Structure of hemoglobin and myoglobin • Types of Hemoglobin • Oxygen dissociation curve. • Abnormalities in Hemoglobin. • Hemoglobinopathies • Plasma proteins • Acute phase proteins & Albumin • Haptoglobin and transferrin. • Ferritin and hemosiderin • Ceruloplasmin. • Antiproteases and amyloidosis • Immunoglobulins • AIDs • Folic acid. • Vitamin B12 • Iron
<ul style="list-style-type: none"> • Bioethics & Professionalism 	<ul style="list-style-type: none"> • Activity I • Activity II • Activity III
<ul style="list-style-type: none"> • Research Club Activity (IUGRC) 	<ul style="list-style-type: none"> • Student practical session no 3
<ul style="list-style-type: none"> • Family Medicine 	<ul style="list-style-type: none"> • Approach to a Patient Aneamia
<ul style="list-style-type: none"> • Vertical components 	<ul style="list-style-type: none"> • The Holy Quran Translation Component
<ul style="list-style-type: none"> • Vertical Integration 	<ul style="list-style-type: none"> • Clinically content relevant to Blood & Immunity module • Mediators of Inflammation (Pathology) • Anemia (Medicine) • Jaundice (Medicine) • Rh incompatibility and its significance -immune (Gynae & Obs)

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Blood and Immunity Module Team

Module Name : Blood and Immunity Module
 Duration of module : 05 Weeks
 Coordinator : Dr. Isma Riaz
 Co-coordinator : Dr. Isma Riaz
 Reviewed by : Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Isma Riaz (Senior Demonstrator of Biochemistry)
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3.	Convener Curriculum	Prof. Dr. Naeem Akhter	3.	Co-coordinator	Dr. Sajjad Hussain (Senior Demonstrator)
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf	4.	Co-Coordinator	Dr. Isma Riaz (Senior Demonstrator of Biochemistry)
5.	Additional Director DME	Prof. Dr. Ifra Saeed	5.	Co-coordinator	Dr. Kamil Tahir (Senior Demonstrator of Physiology)
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar			
7.	Chairperson Biochemistry	Dr. Aneela Jamil	DME Implementation Team		
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8.	Focal Person Anatomy First Year MBBS	Prof. Dr. Ayesha Yousaf	2.	Implementation Incharge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
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10.	Focal Person Biochemistry	Dr. Aneela Jamil	4.	Module planner & Implementation coordinator	Dr. Sidra Hamid
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13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir			
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom			
15.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar			

Module IV- Blood and Immunity Module

Rationale

Blood is a specialized connective tissue that delivers necessary substances such as nutrients and oxygen to the cells and transports metabolic waste products away from those same cells.. Blood accounts for 8% of the human body weight. The average adult has a blood volume of roughly 5 liters, composed of plasma and several kinds of cells (occasionally called corpuscles); these formed elements of the blood are erythrocytes (red blood cells, RBCs), leukocytes (white blood cells), and thrombocytes (platelets). By volume, the red blood cells constitute about 45% of whole blood, the plasma about 54.3%, and white cells about 0.7%.

White blood cells are part of the body's immune system; they destroy and remove old or aberrant cells and cellular debris, as well as attack infectious agents (pathogens) and foreign substances.

The rationale behind is to introduce the students the basic constituents, functions and transport of various substances through blood.

Module Outcomes

By the end of the module, students will be able to:

Knowledge

- This module is expected to build students basic knowledge about normal structure, organization, functions and development of blood and immunity system.
- Used technology based Medical Education including **Artificial Intelligence**
- Appreciate concept and importance of **Biomedical Ethics, Research Family Medicine**

Skills

- Demonstrate effective skill for performing and interpreting various laboratory tests like Haemin crystal test.
- Demonstrate awareness of ethical, legal and social implecation of issues related to bioethics.

Attitude

- Demonstrate **professional attitude, team-building spirit and good communication specially in small group discussions.**

This module will run in 5 weeks duration. Instructional strategies are given in the time table and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning

Methodologies/Strategies

- Large Group Interactive Session (LGIS)
- Small Group Discussion (SGD)
- Self-Directed Learning (SDL)
- Case Based Learning (CBL)
- Problem- Based Learning (PBL)
- Skill Labs/Practicals (SKL)

Tables & Figures

- Table1. Domains of learning according to Blooms Taxonomy
- Figure 1. Prof Umar's Model of Integrated Lecture
- Table2. Standardization of teaching content in Small Group Discussions
- Table 3. Steps of taking Small Group Discussions
- Figure 2. PBL 7 Jumps Model

Table1. Domains of Learning According to Blooms Taxonomy

Sr. #	Abbreviation	Domains of learning
1.	C	Cognitive Domain: knowledge and mental skills.
	• C1	Remembering
	• C2	Understanding
	• C3	Applying
	• C4	Analyzing
	• C5	Evaluating
	• C6	Creating
2.	P	Psychomotor Domain: motor skills.
	• P1	Imitation
	• P2	Manipulation
	• P3	Precision
	• P4	Articulation
	• P5	Naturalization
3.	A	Affective Domain: feelings, values, dispositions, attitudes, etc
	• A1	Receive
	• A2	Respond
	• A3	Value
	• A4	Organize
	• A5	Internalize

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

The large group interactive session is structured format of Prof Umar Model of Integrated lecture. It will be followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explains the underlying phenomena through questions, pictures, videos of patients, interviews and exercises, etc. Students are actively involved in the learning process.

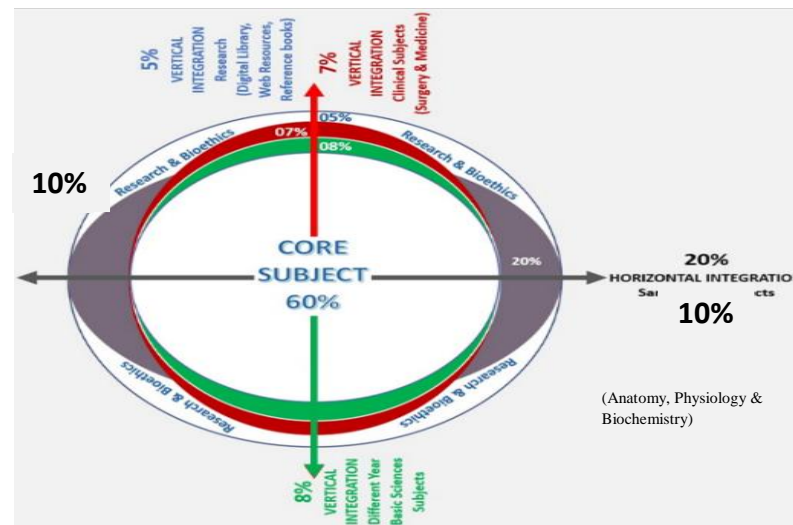


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

This format helps students to clarify concepts acquire skills and attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics or power point presentations. Students exchange opinions and apply knowledge gained from lectures, SGDs and self study. The facilitator role is to ask probing questions, summarize and help to clarify the concepts.

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementaion of Small Group Discussions

Step 1	Sharing of Learning objectives by using students Study guides	First 5 minutes
Step 2	Asking students pre-planned questions from previous teaching session to develop co-relation (these questions will be standardized)	5minutes
Step 3	Students divided into groups of three and allocation of learning objectives	5minutes
Step 4	ACTIVITY: Students will discuss the learning objectives among themselves	15 minutes
Step 5	Each group of students will present its learning objectives	20 min
Step 6	Discussion of learning content in the main group	30min
Step 7	Clarification of concept by the facilitator by asking structured questions from learning content	15 min
Step 8	Questions on core concepts	
Step 9	Questions on horizontal integration	
Step 10	Questions on vertical integration	
Step 11	Questions on related research article	
Step 12	Questions on related ethics content	
Step 13	Students Assessment on online MS teams (5 MCQs)	5 min
Step 14	Summarization of main points by the facilitator	5 min
Step 15	Students feedback on the SGD and entry into log book	5 min
Step 16	Ending remarks	

Self Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be defined
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:
 - i Will be online on LMS (Mid module/ end of Module)
 - ii.OSPE station

Case Based Learning (CBL)

- It's a learner centered model which engages students in discussion of specific scenarios that typically resemble real world examples.
- Case scenario will be given to the students
- Will engage students in discussion of specific scenarios that resemble or typically are real-world examples.
- Learning objectives will be given to the students and will be based on
 - i. To provide students with a relevant opportunity to see theory in practice
 - ii. Require students to analyze data in order to reach a conclusion.
 - iii. Develop analytic, communicative, and collaborative skills along with content knowledge.

Problem Based Learning (PBL)

- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.
- This problem is what drives the motivation and the learning.

The 7- Jump-Format of PBL (Masstricht Medical School)	
Step 7	Synthese & Report
Step 6	Collect Information from outside
Step 5	Generate learning Issues
Step 4	Discuss and Organise Ideas
Step 3	Brainstorming to Identify Explanations
Step 2	Define the Problem
Step 1	Clarify the Terms and Concepts of the Problem Scenario
	Problem- Scenario

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide	10-15 minutes
Practical work	25-30 minutes
Write/ draw and get it checked by teacher	20-25 minutes
05 mcqs at the end of the practical	10 minutes
At the end of module practical copy will be signed by head of department	
At the end of block the practical copy will be signed by	
Head of Department	
Dean	
Medical education department	
QEC	

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- Large Group Interactive Session:
 - Anatomy (LGIS)
 - Physiology (LGIS)
 - Biochemistry (LGIS)
- Small Group Discussions
 - Anatomy (SGD)
 - Physiology (SGD)
 - Biochemistry (SGD)
- Self Directed Topic, Learning Objectives & References
 - Anatomy (SDL)
 - Physiology (SDL)
 - Biochemistry (SDL)
- Skill Laboratory
 - Anatomy
 - Physiology
 - Biochemistry

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	At the End of The Session Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
(General Histology) Lymph node	• Classify lymphoid tissue	C2	LGIS	MCQ SAQ VIVA
	• Define diffuse lymphoid tissue, nodular lymphoid tissue and lymphoid organs	C1		
	• Discuss the histological features of lymph node	C2		
	• Enlist functions of lymph node	C1		
	• Understand the supporting elements of lymph node	C2		
	• Describe filtration through lymph node	C2		
	• Discuss importance of high endothelial venules in lymph node	C2		
	• Discuss the clinical correlation of lymph node	C3		
	• How to use digital library	C3		
	• Read a research article	C3		
(General Histology) Thymus & Tonsil	• Describe the location and functions of thymus	C1	LGIS	MCQ SAQ VIVA
	• Enumerate different types of reticuloepithelial cells	C1		
	• Describe microscopic structure of thymus	C2		
	• Compare the histological structure of thymus and other lymphoid organs	C2		
	• Discuss blood thymus barrier	C2		
	• Describe general histological structure of tonsils	C2		
	• Differentiate palatine, lingual, and pharyngeal tonsils histologically	C2		
	• Discuss the clinical correlation of thymus	C3		
	• Read a research article	C3		
	• How to use digital library	C3		
(General Histology) Spleen	• Describe the location and functions of spleen	C2	LGIS	MCQ SAQ VIVA
	• Describe microscopic structure of spleen	C2		
	• Differentiate between red and white pulp of spleen	C2		
	• Discuss blood circulation through spleen	C2		
	• Discuss the clinical correlation of spleen	C3		

	• Read a research article	C3		
	• How to use digital library	C3		
(General Embryology) Development of Pharyngeal arches & pouches	• Define pharyngeal arches and pouches	C1	LGIS	MCQ SAQ VIVA
	• Discuss the components of pharyngeal arches and pouches	C2		
	• Describe the development and fate of each pharyngeal arch and pouches	C2		
	• Discuss the clinical correlation of pharyngeal arches and pouches	C3		
	• Read a research article	C3		
	• How to use digital library	C3		

Physiology Large Group Interactive Session (LGIS)

Topics	At the end of lecture students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Composition of blood & Hemopoiesis	1. Describe composition and general functions of blood 2. Explain the role of bone marrow in hemopoiesis and erythropoiesis 3. Draw steps of hemopoiesis 4. Define committed and uncommitted cells	1. C2 2. C2 3. C3 4. C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Plasma Proteins	1. Enumerate plasma proteins, their properties, sites of production and their functions. 2. Explain effects of deficiency of plasma proteins 3. Discuss conditions associated with decreased production and increased excretion of plasma proteins	C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties	<ol style="list-style-type: none"> 1. Enumerate and explain various types of leukocytes and steps of leucopoiesis. 2. Explain the characteristics and functions. 3. Conditions in which these cells are increased and decreased. 4. Leukemias and their effects on the body 	C1/C2 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Stages of erythropoiesis & factors affecting erythropoiesis	<ol style="list-style-type: none"> 1. Elaborate Morphological features of RBCs. 2. Describe the stages of production of RBCs. 3. Recall Life span of RBCs 4. Enumerate and explain factors which affect erythropoiesis. 5. Enlist sites of production of erythropoietin 6. Describe recombinant erythropoietin. 7. Explain mechanism of release and action of erythropoietin 	C2 C1 C1 C2 C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Monocytes - macrophage system & lymphocytes	<ol style="list-style-type: none"> 1. Explain the characteristics and functions of monocytes. 2. Explain monocyte-macrophage system; importance 	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Hemoglobin & Hemoglobinopathies, Iron Metabolism	<ol style="list-style-type: none"> 1. Discuss details about iron metabolism in body including iron absorption and storage. 2. Understand the structure, synthesis and functions of hemoglobin and its types. 3. Enlist different types of hemoglobinopathies 	C2 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Process of inflammation and Lines of defense during inflammation	<ol style="list-style-type: none"> 1. Describe the role of neutrophils and monocytes in inflammation. 2. Elaborate Lines of defense 	1.C1, C2 2. C1, C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Red cell fragility, ESR & Red cell indices, Anemia & polycythemia	<ol style="list-style-type: none"> 1. Define RBC fragility; importance; conditions in which fragility is changed. 2. Discuss various blood indices, give their formulae, correlated with different types of anemias. 3. Enumerate various types of anemias and polycythemias. 4. Discuss details about various types of anemias and polycythemia and their effect on circulatory system. 	C1 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)	<ol style="list-style-type: none"> 1. Explain thrombocytopoiesis. 2. Describe functions of platelets 3. Define hemostasis. 4. Explain steps of hemostasis 	C2 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Fate of RBCs & Jaundice	<ol style="list-style-type: none"> 1. Give life span of RBCs and explain their destruction. 2. Describe various types, compare and differentiate between various types of jaundice 	C1, C2 C1, C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Blood coagulation	<ol style="list-style-type: none"> 1. Explain hemostasis, mechanism of blood coagulation, fibrinolysis and anticoagulants 	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Types of immunity, Physiology of innate immunity tolerance & auto immunity	<ol style="list-style-type: none"> 1. Define immunity and its types. 2. Compare and contrast innate and acquired immunity. 3. Difference between passive and active immunity 	C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)	<ol style="list-style-type: none"> 1. Explain Intravascular coagulation. 2. Discuss Bleeding disorders. 3. Enlist Types of hemophilia 	1.C2 2.C2 3. C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Physiology of acquired immunity B-Cells	<ol style="list-style-type: none"> 1. Enumerate various types of lymphocytes 2. Discuss their important characteristics and 3. Explain the mechanism of preprocessing 	C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body)	<ul style="list-style-type: none"> • Discuss different Thromboembolic Conditions • Explain Pulmonary Embolism and clinical correlation <ul style="list-style-type: none"> • Enlist different Anticoagulant therapy 	C2 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS	<ol style="list-style-type: none"> 1. Define clone and explain the roles of T and B lymphocyte clones in immunity 2. Discuss the mechanisms involved in Immune Tolerance 3. Compare Type I and Type IV hypersensitivity reactions 4. Describe the process of immunization 5. Understand role of T-lymphocytes in transplants 6. Identify different types of tissue grafts 	C1, C2 C2 C2 C1 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Physiological mechanism of temperature regulation	<ol style="list-style-type: none"> 1. Explain Concept of temperature 2. Discuss Physiological mechanism of temperature regulation 	C2 C2	LGIS	MCQ SEQ VIVA VOCE

				MCQ (LMS based Assessment, MST based Assessment) OSPE
ABO & Rh Blood grouping system	<ol style="list-style-type: none"> 1. Enlist Blood group and its types 2. Explain Rh Blood Grouping System 	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Role of Hypothalamus in temperature regulation	<ol style="list-style-type: none"> 1. Discuss Role of Hypothalamus in temperature regulation 2. Explain Temperature Regulating centers 	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Rh Blood grouping system and Erythroblastosis fetalis	<ol style="list-style-type: none"> 1. Discuss Rh Blood Grouping System 2. Explain Erythroblastosis fetalis 3. Discuss Clinical correlation 	C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold)	<ol style="list-style-type: none"> 1. Discuss Disorders of temperature regulation 2. Explain Concept of Fever 3. Clinical correlation Of Heat Stroke 	1.C2 2.C2 3.C3	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

<p>Blood transfusion hazards. Tissue and organ transplantations</p>	<ol style="list-style-type: none"> 1. Discuss Blood transfusion hazards. 2. Explain Effect of blood transfusion on various organs 3. Explain Tissue and organ transplantations 	<p>C2 C2 C2</p>	<p>LGIS</p>	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
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Biochemistry Large Group Interactive Session (LGIS)

Topics	At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Blood	• Enlist various functions performed by blood.	C1	LGIS	MCQs SAQs
	• Describe Composition of blood.	C2		
Structure of hemoglobin and myoglobin	• Describe Structure of hemoglobin	C2	LGIS	MCQs SAQs
	• Describe structure of myoglobin.	C2		
	• Discuss Biochemical roles of hemoglobin and myoglobin.	C2		
Types of Hemoglobin	• Enlist various types of Hemoglobin.	C1	LGIS	MCQs SAQs
	• Describe Importance of heme and globin components	C2		
	• Interpret importance of HbA1c in diagnosis of Diabetes	C3		
Oxygen dissociation curve.	• Discuss Importance of oxygen dissociation curve.	C2	LGIS	MCQs SAQs
	• Enlist various factors affecting the curve.	C1		
Abnormalities in Hemoglobin.	• Elaborate congenital abnormalities in structure of Hemoglobin.	C2	LGIS	MCQs SAQs
	• Enlist Structural defects of hemoglobin	C1		
	• Discuss Preventive measures.	C2		
Hemoglobinopathies	• Discuss hemoglobinopathies.	C2	LGIS	MCQs SAQs
	• Enlist Types of thalassemia.	C1		
	• Discuss Familial counseling.	C2		
	• Elaborate Preventive measures.	C2		
Heme synthesis	• Describe enzymatic regulation of heme synthesis	C2	LGIS	MCQs SAQs
Porphyria	• Discuss various types of porphyria	C2		
Breakdown of hemoglobin	• Elaborate steps in the breakdown of hemoglobin.	C2	LGIS	MCQs SAQs
	• Describe Steps in synthesis of Bilirubin	C2		
Jaundice.	• Recall Normal level of S. Bilirubin.	C1	LGIS	MCQs SAQs
	• Define jaundice.	C1		
	• Recall normal level of Bilirubin	C1		
	• Enlist types of Jaundice.	C1		
	• Describe Biochemical tests to distinguish various types of jaundice.	C2	LGIS	

	• . Describe Physiological Jaundice	C2		
Plasma proteins	• Describe plasma proteins.	C2	LGIS	MCQs SAQs
	• Discuss Biochemical role of various plasma proteins.	C2		
	• Recall normal levels of plasma proteins	C1		
	• Illustrate Role of A/G ratio.	C3		
Acute phase proteins & Albumin	• Enlist various proteins raise in inflammation.	C1	LGIS	MCQs SAQs
	• Describe Role of albumin.	C2		
	• Discuss Role of C- reactive protein.	C2		
Haptoglobin and transferrin	• Describe Structure of Haptoglobin and transferrin.	C2	LGIS	MCQs SAQs
	• Discuss biochemical Role of Haptoglobin and transferrin.	C2		
Ferritin and hemosiderin	• Describe biochemical role of ferritin and hemosiderin.	C2	LGIS	MCQs SAQs
	• Describe Hemosiderosis.	C2		
Ceruloplasmin.	• Describe biochemical role of ceruloplasmin.	C2	LGIS	MCQs SAQs
	• Discuss Wilson's disease.	C2		
Iron	• Recall Sources of iron.	C1	LGIS	MCQs SAQs
	• Describe Transport and absorption of iron.	C2		
	• Discuss hyper and hypo functions of iron.	C2		
Immunoglobulins	• Describe Structure of Immunoglobulin.	C2	LGIS	MCQs SAQs
	• Discuss biochemical role of various Immunoglobulin.	C2		
	• Elaborate Class switching.	C2		
AIDs	• Define AIDs	C1	LGIS	MCQs SAQs
	• Describe Immunological defects in AIDs.	C2		
	• Discuss various preventive measures.	C2		
Folic acid.	• Recall Sources of folic acid.	C1	LGIS	MCQs SAQs
	• Discuss deficiency effects of folic acid	C2		
	• Describe biochemical role of folic acid.	C2		
	• Recall Recommended Dietary allowance.	C1		
Vitamin B12	• Recall Sources of Vitamin B12	C1	LGIS	MCQs SAQs
	• Describe biochemical role of vitamin B12	C2		
	• Discuss Deficiency effects of B12	C2		

Anatomy Small Group Discussion (SGDs)

Topic	At the End Of The Session Students Should Be Able To:	Learning Domains	Teaching Strategy	Assessment Tools
Posterior Compartment of Leg (muscles) and flexor retinaculum	• Illustrate cutaneous innervation	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Describe superficial fascia & deep fascia.	C2		
	• Discuss superficial and deep muscle groups in posterior compartment	C2		
	• Tabulate origin, insertion, nerve supply and action of all muscles of posterior compartment of leg	C2		
	• Discuss ruptured calcaneal tendon, calcaneal bursitis and accessory soleus muscle	C3		
	• How to use digital library	C3		
	• Read a research article	C3		
Posterior Compartment of Leg (Neurovascular organization)	• Describe origin, course relations, branches and tributaries of neurovascular bundle	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Discuss superficial veins i.e long and short saphenous veins	C2		
	• Palpate the posterior tibial pulse	C3		
	• Discuss clinical correlation related to venous return in leg	C3		
	• How to use digital library	C3		
	• Read a research article	C3		
Bones of Foot	• Enumerate the bones of foot	C1	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Identify different bones of foot	C1		
	• Discuss bony features and muscle attachment	C2		
	• Discuss fracture of metatarsals and os trigonum, avascular necrosis of head of talus	C3		
	• Read a research article	C3		
	• How to use a digital library	C3		
Dorsum of foot	• Tabulate muscle on the dorsal aspect of foot	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Describe blood supply and nerve supply	C2		
	• Discuss cutaneous innervation of dorsum of foot	C2		
	• Palpate the dorsalis pedis artery on dorsum of foot	C3		
	• Discuss other clinicals related to the dorsum of the foot	C3		
	• Read a research article	C3		

	• How to use a digital library	C3		
Ankle Joint	• Describe the articular surfaces of ankle joint	C2	Skill Lab	MCQ SAQ VIVA OSPE
	• Describe the attachment of capsule	C2		
	• Enumerate the ligaments	C1		
	• Discuss the movements possible at ankle joint and muscles producing them	C2		
	• Discuss ankle sprain	C3		
	• Discuss different types of ankle injuries	C3		
	• Read a research article	C3		
	• How to use a digital library	C3		
Joints of Foot	• Classify the joints of foot	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Discuss the articular surfaces, joint capsules, ligaments, movements and muscles producing movements	C2		
	• Discuss major ligaments in detail	C2		
	• Discuss tibial nerve entrapment	C3		
	• Discuss club foot, claw foot and other clinical conditions	C3		
	• Read a research article	C3		
	• How to use a digital library	C3		
Sole of foot (Muscles)	• Identify Surface landmarks	C1	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Describe cutaneous innervation of sole of foot	C2		
	• Describe Plantar aponeurosis its attachments	C2		
	• Discuss flexor retinaculum	C2		
	• Discuss muscles in different layers of foot with origin, insertion, nerve supply and actions	C2		
	• Read a research article	C3		
	• How to use a digital library	C3		
Sole of foot (Neurovascular Organization)	• Enlist nerves and arteries present in sole of foot	C1	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Discuss route and relations of neurovascular bundle in sole of foot	C2		
	• Describe the formation of vascular arches of foot along with clinicals	C2, C3		
	• Discuss plantar fasciitis	C3		
	• Discuss other clinical correlations	C3		
	• Read a research article	C3		
	• How to use a digital library	C3		

Arches of Foot and Gait Cycle	• Classify the arches of foot	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Describe different components of arches of foot	C2		
	• Discuss stability factors of arches of foot	C2		
	• Discuss pes planus (flat foot), club foot and other clinicals	C3		
	• Discuss gait cycle and its stages	C2		
	• Read a research article	C3		
	• How to use a digital library	C3		
Thymus, Tonsils	• Describe location of thymus and tonsils	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Discuss anatomical features of thymus and tonsils	C2		
	• Describe blood supply, venous drainage and lymphatic drainage of thymus and tonsils	C2		
	• Enumerate functions of thymus and tonsils	C1		
	• Discuss clinical correlations of thymus and tonsils	C3		
	• Read a research article	C3		
	• How to use a digital library	C3		
Spleen	• Discuss the location of spleen	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Enumerate anatomical relations of spleen	C1		
	• Discuss blood supply, venous drainage and lymphatic drainage of spleen	C2		
	• Discuss clinical correlations of spleen with special reference to splenectomy	C3		
	• Read a research article	C3		
	• How to use a digital library	C3		
Radiology and Surface Marking	• Identify different structures on radiographs	C3	SGD, Skill Lab	MCQ SAQ VIVA OSPE
	• Demonstrate the surface anatomy of various structures present in posterior compartment of leg and foot	P		
	• Demonstrate the surface anatomy of spleen, thymus and tonsils	P		

Physiology Small Group Discussion (SGDs)

Topics	At the end of discussion students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Functions & composition of blood, Hemopoiesis and Bone marrow	<ol style="list-style-type: none"> 1. Describe composition and general functions of blood 2. Explain the role of bone marrow in hemopoiesis and erythropoiesis 3. Draw steps of hemopoiesis 4. Define committed and uncommitted cells 5. Correlate basic knowledge with clinical application 	<ol style="list-style-type: none"> 1. C2 2. C2 3. C3 4. C1 5. C3 	SGD	<p style="text-align: center;">MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
Hemoglobin & Hemoglobinopathies, Iron Metabolism	<ol style="list-style-type: none"> 1. Discuss details about iron metabolism in body including iron absorption and storage 2. Understand the structure, synthesis and functions of hemoglobin and its types 3. Enlist different types of hemoglobinopathies 4. Correlate basic knowledge with clinical application 	<ol style="list-style-type: none"> C2 C2 C1 C3 	SGD	<p style="text-align: center;">MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)	<ol style="list-style-type: none"> 1. Explain thrombocytopenia 2. Describe functions of platelets 3. Define hemostasis 4. Explain steps of hemostasis 5. Correlate basic knowledge with clinical application 	<ol style="list-style-type: none"> C2 C2 C1 C2 C3 	SGD	<p style="text-align: center;">MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
Physiological mechanism of temperature regulation	<ol style="list-style-type: none"> 1. Explain Concept of temperature 2. Discuss Physiological mechanism of temperature regulation 3. Correlate basic knowledge with clinical application 	<ol style="list-style-type: none"> C2 C2 C3 	SGD	<p style="text-align: center;">MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
	<ol style="list-style-type: none"> 1. Elaborate Morphological features of RBCs 2. Describe the stages of production of RBCs 	<ol style="list-style-type: none"> C2 C1 		MCQ

Stages of Erythropoiesis Factors Affecting Erythropoiesis (First week)	<ol style="list-style-type: none"> 3. Recall Life span of RBCs 4. Enumerate and explain factors which affect erythropoiesis 5. Enlist sites of production of erythropoietin 6. Describe recombinant erythropoietin 7. Explain mechanism of release and action of erythropoietin 	<p>C1 C2 C1 C2 C2</p>	SGD	<p>SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
Physiology of WBC (third week)	<ol style="list-style-type: none"> 1. Enumerate and explain various types of leukocytes and steps of leucopoiesis 2. Explain the characteristics and functions 3. Conditions in which these cells are increased and decreased 4. Leukemias and their effects on the body 	<p>C1/C2 C2 C2 C2</p>	SGD	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
Physiology of platelets (Fourth week)	<ol style="list-style-type: none"> 1. Explain thrombocytopenia 2. Describe functions of platelets 3. Define hemostasis 4. Explain steps of hemostasis 	<p>C2 C2 C1 C2</p>	SGD	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
Blood transfusion hazards. Tissue and organ transplantations (Fifth week)	<ol style="list-style-type: none"> 1. Discuss Blood transfusion hazards. 2. Explain Effect of blood transfusion on various organs 3. Explain Tissue and organ transplantations 	<p>C2 C2 C2</p>	SGD	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) (Fifth week)	<ol style="list-style-type: none"> 1. Discuss Disorders of temperature regulation 2. Explain Concept of Fever 3. Clinical correlation Of Heat Stroke 	<p>1.C2 2.C2 3.C3</p>	SGD	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>

Biochemistry Small Group Discussion (SGDs)

Topic	At the End of Tutorial Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Blood	• Explain structure and biomedical role of hemoglobin & Myoglobin	C2	SGD	MCQs, SAQs Viva
	• Describe oxygen dissociation curve and its significance.	C2		
	• Types of Hb	C1		
Iron	• Describe sources, structure, Biochemical role and related diseases of iron.	C2	SGD	MCQs, SAQs Viva

Anatomy Self-Directed Learning (SDL)

Topics	Learning objectives	Learning Resources
Posterior compartment of leg and flexor retinaculum	<ul style="list-style-type: none"> • Illustrate cutaneous innervation • Describe superficial fascia & deep fascia. • Discuss superficial and deep muscle groups in posterior compartment • Tabulate origin, insertion, nerve supply and action of all muscles of posterior compartment of leg • Discuss ruptured calcaneal tendon, calcaneal bursitis and accessory soleus muscle 	<ul style="list-style-type: none"> • Clinically Oriented Anatomy 9th Edition, pg no.755 • https://www.youtube.com/watch?v=Bj4c7wGdIwc&pp=ygUTY29tcGFydG1lbnRzIG9mIGxlZw%3D%3D • https://www.sciencedirect.com/science/article/abs/pii/S1440244004800343 •
Neurovascular organization of posterior compartment of leg	<ul style="list-style-type: none"> • Describe origin, course relations, branches and tributaries of neurovascular bundle • Discuss superficial veins i.e long and short saphenous veins • Palpate the posterior tibial pulse • Discuss clinical correlation related to venous return in leg 	<ul style="list-style-type: none"> • Clinically Oriented Anatomy 9th Edition, pg no. 755 • https://www.youtube.com/watch?v=Bj4c7wGdIwc&pp=ygUTY29tcGFydG1lbnRzIG9mIGxlZw%3D%3D • https://www.mdpi.com/2077-0383/11/21/6448
Foot Joints	<ul style="list-style-type: none"> • Classify the joints of foot • Discuss the articular surfaces, joint capsules, ligaments, movements and muscles producing movements • Discuss major ligaments in detail • Discuss tibial nerve entrapment • Discuss club foot, claw foot and other clinical conditions 	<ul style="list-style-type: none"> • Clinically Oriented Anatomy 9th Edition, pg no. 808 • https://www.youtube.com/watch?v=Ex9KzkAYN-8&pp=ygUKZm9vdCBqb2ludA%3D%3D • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3180294/
Ankle joint	<ul style="list-style-type: none"> • Describe the attachment of capsule • Enumerate the ligaments • Discuss the movements possible at ankle joint and muscles producing them • Discuss ankle sprain • Discuss different types of ankle injuries • 	<ul style="list-style-type: none"> • Clinically Oriented Anatomy 9th Edition, pg no. 806 • https://www.youtube.com/watch?v=Ex9KzkAYN-8&pp=ygUKZm9vdCBqb2ludA%3D%3D • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3414868/

Sole of foot	<ul style="list-style-type: none"> • Identify Surface landmarks • Describe cutaneous innervation of sole of foot • Describe Plantar aponeurosis its attachments • Discuss flexor retinaculum • Discuss muscles in different layers of foot with origin, insertion, nerve supply and actions 	<ul style="list-style-type: none"> • Clinically Oriented Anatomy 9th Edition, pg no. 768-781 • https://www.youtube.com/watch?v=JorGDBbPzI&pp=ygUcc29sZSBvZiBmb290IGFuYXRvbXkgbGVjdHVyZQ%3D%3D • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3311689/
Spleen	<ul style="list-style-type: none"> • Discuss the location of spleen • Enumerate anatomical relations of spleen • Discuss blood supply, venous drainage and lymphatic drainage of spleen • Discuss clinical correlations of spleen with special reference to splenectomy 	<ul style="list-style-type: none"> • Clinically Oriented Anatomy 9th Edition, pg no. 487 • https://www.youtube.com/watch?v=3K5I6MMDA8M&pp=ygUOc3BsZWVuIGFuYXRvbXk%3D • https://www.sciencedirect.com/science/article/pii/S0046817782802232
Gait cycle	<ul style="list-style-type: none"> • Define the gait cycle • Discuss the stages of gait cycle 	<ul style="list-style-type: none"> • Clinically Oriented Anatomy 9th Edition, pg no. 701, 768-781 • https://www.youtube.com/watch?v=1u6d1CX7o9c&pp=ygUXZ2FpdCBjeWNsZSBiaW9tZWNoYW5pY3M%3D • https://www.sciencedirect.com/topics/engineering/gait-cycle

Physiology Self-Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning Resources
<p style="text-align: center;">ON CAMPUS</p> <p>Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)</p>	<ol style="list-style-type: none"> 1. Explain thrombocytopenia 2. Describe functions of platelets 3. Define hemostasis <ul style="list-style-type: none"> • Explain steps of hemostasis 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition. Section 05, (Chapter 31, Page 564) (Chapter 03, Page 79) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 558) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 24, Page 413) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 37, Page 477,487) • https://my.clevelandclinic.org/health/symptoms/21999-hemostasis • https://www.sciencedirect.com/topics/neuroscience/hemostasis
<p>Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)</p>	<ol style="list-style-type: none"> 1. Explain Intravascular coagulation 2. Discuss Bleeding disorders <ul style="list-style-type: none"> • Enlist Types of hemophilia 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition. Section 05, (Chapter 31, Page 566) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 24, page 427) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 37, Page 484) • https://youtu.be/unp3vGsxIIA • https://www.hematology.org/education/patients/bleeding-disorders
<p style="text-align: center;">(OFF CAMPUS):</p> <p>Composition of blood</p>	<ol style="list-style-type: none"> 1.Describe composition and general functions of blood 2.Explain the role of bone marrow in hemopoiesis and erythropoiesis 3.Draw steps of hemopoiesis • 4. Define committed and uncommitted cells 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition. Section 05, Cardiovascular Physiology (Chapter 31, Page 553) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 547,548) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 19, Page 347) (Chapter 20, Page 356) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Red blood cells, Anemia and Polycythemia. Section 06. (Chapter 33, Page 439) 1. https://accessmedicine.mhmedical.com/content.aspx?bookid=3047&sectionid=255121548 • 2.https://youtu.be/cm8IK24RRvA

<p>Function of Plasma Proteins</p>	<p>1.Enumerate plasma proteins, their properties, sites of productions and their functions 2.Explain effects of deficiency of plasma proteins</p> <ul style="list-style-type: none"> 3.Discuss conditions associated with decreased production and increased excretion of plasma proteins 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition. Section 05, Cardiovascular Physiology (Chapter 31, Page 563) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 547) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 19, Page 348,353) <ol style="list-style-type: none"> https://www.ncbi.nlm.nih.gov/books/NBK531504/ https://accessmedicine.mhmedical.com/content.aspx?bookid=1366&sectionid=73247095
<p>WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties</p>	<p>Enumerate and explain various types of leukocytes and steps of leucopoiesis Explain the characteristics and functions Conditions in which these cells are increased and decreased</p> <ul style="list-style-type: none"> Leukemias and their effects on the body 	<ul style="list-style-type: none"> Textbook of Medical Physiology by Guyton & Hall.14th Edition. Resistance of the body to Infection. Section 06. (Chapter 34, Page 449,456,457) <ol style="list-style-type: none"> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9777002/ https://youtu.be/TelOcCkZX7c
<p>Monocytes - macrophage system & lymphocytes</p>	<p>Explain the characteristics and functions of monocytes.</p> <ul style="list-style-type: none"> Explain monocyte-macrophage system; importance 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition. Section 01, Immunity, Infection and Inflammation (Chapter 03, Page 67) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 21, Page 371) (Chapter 22, Page 387) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452) <ol style="list-style-type: none"> https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4
<p>Process of inflammation and Lines of defense during inflammation</p>	<ol style="list-style-type: none"> Describe the role of neutrophils and monocytes in inflammation <ul style="list-style-type: none"> Elaborate Lines of defense 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition. Section 01, Immunity, Infection and Inflammation (Chapter 03, Page 81) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 22, Page 384) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 454)

		<ol style="list-style-type: none"> 1. https://youtu.be/WFm9j1rNkQs 2. https://en.wikipedia.org/wiki/Inflammation 3. https://www.verywellhealth.com/signs-of-inflammation-4580526
Red cell fragility, ESR & Red cell indices, Anemia & polycythemia	<ol style="list-style-type: none"> 1. Define RBC fragility; importance; conditions in which fragility is changed. 2. Discuss various blood indices, give their formulae, co-relate with different types of anemias. 3. Enumerate various types of anemias and polycythemias. <ul style="list-style-type: none"> • Discuss details about various types of anemias and polycythemia and their effect on circulatory system. 	<ol style="list-style-type: none"> 1. Ganong's Review of Medical Physiology. 25TH Edition. Section 05, (Chapter 31, Page 555) 2. Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 553) 3. Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 23, Page 407,409) 4. Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 06. (Chapter 34, Page 446,447) <ol style="list-style-type: none"> 1. https://www.sciencedirect.com/topics/medicine-and-dentistry/red-blood-cell-indices 2. https://youtu.be/QUHqYVK-Nhg 3. https://youtu.be/mOrRJBqm744
Blood coagulation	<ul style="list-style-type: none"> • Explain hemostasis, mechanism of blood coagulation, fibrinolysis and anticoagulants 	<ol style="list-style-type: none"> 1. Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 559) 2. Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 24, Page 417) 3. Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 06. (Chapter 37, Page 479) <ol style="list-style-type: none"> 1. https://youtu.be/gExUCrpAKyQ 2. https://medlineplus.gov/lab-tests/coagulation-factor-tests/
ABO & Rh Blood grouping system	<ul style="list-style-type: none"> • Blood group and its types Rh Blood Grouping System 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology. 25TH Edition. Section 05, (Chapter 31, Page 558) (Chapter 36, Page 473) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 25, Page 432) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 06. (Chapter 36, Page 471) • https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/abo-blood-group-system • https://youtu.be/wfqnuYIY78

Biochemistry Self-Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning resources
Structure of hemoglobin and myoglobin	<ul style="list-style-type: none"> Describe Structure of hemoglobin Describe structure of myoglobin. Discuss Biochemical roles of hemoglobin and myoglobin. 	<ul style="list-style-type: none"> Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 03, page 25-28) https://doi.org/10.1016/j.bcmed.2017.10.006 https://www.youtube.com/watch?v=Qv-KExGKAYw Use digital library https://chemed.chem.purdue.edu/genchem/topicreview/bp/1biochem/blood3.html
Types of Hemoglobin	<ul style="list-style-type: none"> Enlist various types of Hemoglobin. Describe Importance of heme and globin components Interpret importance of HbA1c in diagnosis of Diabetes 	<ul style="list-style-type: none"> Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 03, page 33-34) https://pubmed.ncbi.nlm.nih.gov/34200315/ https://www.youtube.com/@DrAishwaryaKelkar Use digital library https://www.ucsfhealth.org/medical-tests/hemoglobin-electrophoresis#:~:text=Many%20different%20types%20of%20hemoglobin,have%20small%20amounts%20of%20HbF
Oxygen dissociation curve.	<ul style="list-style-type: none"> Discuss Importance of oxygen dissociation curve. Enlist various factors affecting the curve. 	<ul style="list-style-type: none"> Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 03, page 28-32) https://pubmed.ncbi.nlm.nih.gov/2650756/ https://youtu.be/BYGPkRFvzOc Use digital library https://www.osmosis.org/learn/Oxygen-hemoglobin_dissociation_curve
Hemoglobinopathies	<ul style="list-style-type: none"> Discuss hemoglobinopathies. Enlist Types of thalassemia. Discuss Familial counseling. Elaborate Preventive measures. 	<ul style="list-style-type: none"> Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 03, page 35-39) https://pubmed.ncbi.nlm.nih.gov/30193516/ https://youtu.be/34u1sOLrgV0 Use digital library https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3163784/
Heme synthesis	<ul style="list-style-type: none"> Describe enzymatic regulation of heme synthesis 	<ul style="list-style-type: none"> Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 21, page 277-279)

		<ul style="list-style-type: none"> • https://www.sciencedirect.com/science/article/pii/S0891584999002233 • Use digital library • https://www.youtube.com/watch?v=f-0n_eOK4JE • https://pubmed.ncbi.nlm.nih.gov/29126700/
Porphyria	<ul style="list-style-type: none"> • Discuss various types of porphyria 	<ul style="list-style-type: none"> • Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 21, page 279-281) • https://pubmed.ncbi.nlm.nih.gov/20226990/ • https://www.mayoclinic.org/diseases-conditions/porphyria/symptoms-causes/syc-20356066#:~:text=Porphyria%20(por%2DFEAR%2De,the%20bodys%20organs%20and%20tissues. • https://www.aacc.org/science-and-research/clinical-chemistry-trainee-council/trainee-council-in-english/pearls-of-laboratory-medicine/2012/porphyrias
Breakdown of hemoglobin	<ul style="list-style-type: none"> • Elaborate steps in the breakdown of hemoglobin. • Describe Steps in synthesis of Bilirubin • Recall Normal level of S. Bilirubin. 	<ul style="list-style-type: none"> • Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 21, page 282-283) • https://www.sciencedirect.com/science/article/pii/S0891584999002233 • Use digital library • https://www.youtube.com/watch?v=f-0n_eOK4JE • https://pubmed.ncbi.nlm.nih.gov/29126700/
Jaundice	<ul style="list-style-type: none"> • Define jaundice. • Recall normal level of Bilirubin. • Enlist types of Jaundice. • Describe Biochemical tests to distinguish various types of jaundice. • Describe Physiological Jaundice 	<ul style="list-style-type: none"> • Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 21, page 284-285) • https://pubmed.ncbi.nlm.nih.gov/14765767/ • https://www.youtube.com/watch?v=gIACp5js4MU • https://my.clevelandclinic.org/health/diseases/15367-adult-jaundice

Plasma proteins	<ul style="list-style-type: none"> • Describe plasma proteins. • Discuss Biochemical role of various plasma proteins. • Recall normal levels of plasma proteins • Illustrate Role of A/G ratio. 	<ul style="list-style-type: none"> • Harpers Illustrated biochemistry 30th edition (Chapter 49, page 588-589) • http://ib.bioninja.com.au/options/option-d-human-physiology/d3-functions-of-the-liver/plasma-proteins.html • https://www.nottingham.ac.uk/nmp/sonet/rlos/bioproc/plasma_proteins/page_three.html • https://pubmed.ncbi.nlm.nih.gov/21544836/ • Use digital library
Acute phase proteins & Albumin	<ul style="list-style-type: none"> • Describe Role of albumin. • Discuss Role of C- reactive protein. 	<ul style="list-style-type: none"> • Harpers Illustrated biochemistry 30th edition (Chapter 49, page 590-592) • https://www.youtube.com/watch?v=xMSEI1ad0z8 • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3053509/ • https://pubmed.ncbi.nlm.nih.gov/9971870/ • Use digital library
Haptoglobin and transferrin	<ul style="list-style-type: none"> • Describe Structure of Haptoglobin and transferrin. • Discuss biochemical Role of Haptoglobin and transferrin. 	<ul style="list-style-type: none"> • Harpers Illustrated biochemistry 30th edition (Chapter 49, page 592) • https://pubmed.ncbi.nlm.nih.gov/23016887/ • https://www.youtube.com/watch?v=QR_hcSow4OI • https://pubmed.ncbi.nlm.nih.gov/7027909/ • Use digital library
Ferritin and hemosiderin	<ul style="list-style-type: none"> • Describe biochemical role of ferritin and hemosiderin. • Describe Hemosiderosis. 	<ul style="list-style-type: none"> • Harpers Illustrated biochemistry 30th edition (Chapter 49, page 592-594) • http://www.vivo.colostate.edu/hbooks/pathphys/topics/ferritin.html • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4831249/ • https://www.forthwithlife.co.uk/blog/whats-the-difference-between-ferritin-and-iron/ • Use digital library

Ceruloplasmin.	<ul style="list-style-type: none"> Describe biochemical role of ceruloplasmin. Discuss Wilson's disease. 	<ul style="list-style-type: none"> Harpers Illustrated biochemistry 30th edition (Chapter 49, page 595-597) https://pubmed.ncbi.nlm.nih.gov/12055353/ https://www.youtube.com/watch?v=KCh-7Ghj0jY https://www.mountsinai.org/health-library/tests/ceruloplasmin-blood-test Use digital library
Antiproteases and amyloidosis	<ul style="list-style-type: none"> Describe biochemical role of antiproteases and amyloidosis. 	<ul style="list-style-type: none"> Harpers Illustrated biochemistry 30th edition (Chapter 49, page 597-598) https://pubmed.ncbi.nlm.nih.gov/31986086/ https://pubmed.ncbi.nlm.nih.gov/1719439/ https://www.youtube.com/watch?v=CQ5q3phGdtQ Use digital library
Immunoglobulins	<ul style="list-style-type: none"> Describe Structure of Immunoglobulin. Discuss biochemical role of various Immunoglobulin. Elaborate Class switching. 	<ul style="list-style-type: none"> Harpers Illustrated biochemistry 30th edition (Chapter 49, page 599-603) https://pubmed.ncbi.nlm.nih.gov/4188929/ https://www.youtube.com/watch?v=29mlSMaD-cY https://medlineplus.gov/lab-tests/immunoglobulins-blood-test/#:~:text=Immunoglobulins%20are%20also%20called%20antibodies,to%20destroy%20only%20those%20germs. Use digital library
AIDs	<ul style="list-style-type: none"> Define AIDs Describe Immunological defects in AIDs. Discuss various preventive measures. 	<ul style="list-style-type: none"> Mushtaq volume II, 7th edition (chapter 11 page – 333-338) https://pubmed.ncbi.nlm.nih.gov/3277764/ https://www.who.int/news-room/fact-sheets/detail/hiv-aids#:~:text=Acquired%20immunodeficiency%20syndrome%20(AIDS)%20is,tuberculosis%2C%20infections%20and%20some%20cancers. https://www.cdc.gov/hiv/basics/whatishiv.html Use digital library

Folic acid.	<ul style="list-style-type: none"> • Recall Sources of folic acid. • Discuss deficiency effects of folic acid • Describe biochemical role of folic acid. • Recall Recommended Dietary allowance. 	<ul style="list-style-type: none"> • Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 28, page 378-379) • https://pubmed.ncbi.nlm.nih.gov/29777755/ • https://www.cdc.gov/ncbddd/folicacid/about.html • https://www.cdc.gov/ncbddd/folicacid/about.html#:~:text=When%20the%20baby%20is%20developing,the%20early%20brain%20and%20spine. • Use digital library
Vitamin B12	<ul style="list-style-type: none"> • Recall Sources of Vitamin B12 • Describe biochemical role of vitamin B12 • Discuss Deficiency effects of B12 	<ul style="list-style-type: none"> • Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 28, page 379-381) • https://pubmed.ncbi.nlm.nih.gov/25824066/ • https://ods.od.nih.gov/factsheets/VitaminB12-HealthProfessional/ • https://www.youtube.com/watch?v=j-2xHmcKkcy • Use digital library
Iron	<ul style="list-style-type: none"> • Recall Sources of iron. • Describe Transport and absorption of iron. • Discuss hyper and hypo functions of iron. 	<ul style="list-style-type: none"> • Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 29, page 403-404) • https://pubmed.ncbi.nlm.nih.gov/34373750/ • https://www.youtube.com/watch?v=vSkb0kDacjs • https://ods.od.nih.gov/factsheets/Iron-HealthProfessional/ • Use digital library

Histology Practicals Skill Laboratory (SKL)

Topic	At the End of The Session Students Should Be Able To:	Learning Domains	Teaching Strategy	Assessment Tools
Lymph node	• Identify lymph node under microscope	P	Skill Lab	OSPE
	• Focus the slide	P		
	• Draw the histological structure of lymph node	C2		
	• Enlist two identification points of lymph node	C1		
Thymus	• Identify the slide of thymus under light microscope	P	Skill Lab	OSPE
	• Focus the slide	P		
	• Draw the histological structure of thymus	C2		
	• Enlist two identifications points of thymus	C1		
Spleen	• Identify the slide of spleen under light microscope	P	Skill Lab	OSPE
	• Focus the slide	P		
	• Draw histological structure of spleen,	C2		
	• Enlist two identification points of spleen	C1		
Tonsils	• Identify the slide of tonsils under light microscope	P	Skill Lab	OSPE
	• Focus the slide	P		
	• Draw histological structure of tonsils	C2		
	• Write two identification points of tonsils	C1		

Physiology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives	Learning Domains	Learning Strategy	Assessment Tools
Determination of Rh blood group	<ul style="list-style-type: none"> • Principle • Procedure • Methods • Types of blood groups • Clinical Correlations of blood transfusion 	C1/C3 A3 P3	Practical/ skill lab	Viva Voce OSPE Video Assisted Assessment
Determination of Clotting time (CT)	<ul style="list-style-type: none"> • Procedure • Clinical importance • Recall Normal values 	C1/C3 A3 P3	Practical/ skill lab	Viva Voce OSPE Video Assisted Assessment
Determination of Bleeding time (BT)	<ul style="list-style-type: none"> • Procedure • Clinical importance • Recall Normal values 	C1/C3 A3 P3	Practical/ skill lab	Viva Voce OSPE Video Assisted Assessment
Recording of Body Temperature	<ul style="list-style-type: none"> • Principle • Procedure • Methods • Clinical Correlations 	C1/C3 A3 P3	Practical/ skill lab	Viva Voce OSPE Video Assisted Assessment

Biochemistry Practical Skill Laboratory (SKL)

Topic	At the End of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Draw of Blood Technique	<ul style="list-style-type: none"> • How to draw blood 	P	Skill Lab	OSPE
Quantitative Estimation of Serum Total Proteins	<ul style="list-style-type: none"> • Perform estimation of serum Protein • Describe Principal, method, normal blood level and clinical significance of S. Proteins 	P	Skill Lab	OSPE
Hemin crystals Technique to draw blood	<ul style="list-style-type: none"> • Describe Preparation, shape and clinical significance of hemin crystals Illustrate Method and precautions to draw blood. 	P	Skill Lab	OSPE
Estimation of S. Bilirubin	<ul style="list-style-type: none"> • Perform estimation of serum bilirubin • Describe Principal, method, normal blood level and clinical significance of S. Bilirubin 	P	Skill Lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**
- **Longitudinal Themes**
 - **Biomedical Ethics & Professionalism**
 - **Family Medicine**
 - **Artificial Intelligence (Innovation)**
 - **Integrated Undergraduate Research Curriculum (IUGRC)**

Case Based Learning Objectives (CBL)

Subjects	Topics	At the end of the session the student should be able to	Learning Domains
Anatomy	• Ankle sprain	Apply basic knowledge of subject to study clinical case.	C3
	• Flat foot	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Anemia	Apply basic knowledge of subject to study clinical case	C3
Biochemistry	• Thalassemia	Apply basic knowledge of subject to study clinical case.	C3
	• Jaundice	Apply basic knowledge of subject to study clinical case.	C3

Vertical Integration LGIS

Pathology

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Mediators of Inflammation	• Define inflammation	C1	LGIS	MCQ
	• Classify inflammation	C2		
	• Classify mediators of inflammation	C2		
	• Cell derived Plasma derived			
	• Describe general features of mediators of inflammation	C1		

Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Jaundice	• Discuss Jaundice.	C2	LGIS	MCQs
	• Discuss various Types and Subtypes of Jaundice.	C2		
	• Discuss the signs and symptoms of a patient with Jaundice due to various Causes.	C2		
	• Discuss the workup for diagnosis of different type of Jaundice	C2		
	• Discuss Treatment of Various Causes of Jaundice.	C2		
	• Discuss the diagnostic workup and treatment.	C2		
	• Define Heat Stroke.	C1		
	• Discuss the clinical Presentation of Heat Stroke.	C2		
• Discuss the diagnostic workup and management.	C2			

Family Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Anemia	• Define Anemia.	C1	LGIS	MCQs
	• Discuss various Types and Subtypes of Anemia.	C2		
	• Discuss the signs and symptoms of a patient with Anemia.	C2		
	• Discuss the workup for diagnosis of type of anemia.	C2		
	• Discuss Treatment of Various types of anemia.	C2		

Obstetrics & Gynecology

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Rh incompatibility and its significance	<ul style="list-style-type: none"> • Know the basic pathophysiology of Rh sensitization 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> • Describe the fetal effects of Rh isoimmunization 	C2		
	<ul style="list-style-type: none"> • Understand signs of fetal anemia 	C2		
	<ul style="list-style-type: none"> • Describe role of Anti-D antibodies in prevention of Rh isoimmunization 	C2		

Biomedical Ethics

Topics	At the end of session students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Laboratory Ethics	At the end of the session students should be able to;		Short video demonstration on violation of Ethical principle of autonomy from suit CBEC Video resources	<ul style="list-style-type: none"> • Assignment based assessment involving real life case scenarios under aggregate Marks (Internal Assessment) • Assignment to be uploaded on LMS
	<ul style="list-style-type: none"> • Understand the importance of taking permission before performing procedures (drawing blood, administering injections etc.) during laboratory sessions. A1 	A1		
	<ul style="list-style-type: none"> • Show Respects other health professional team members and complete assigned task in professional manner. A1 • Employ collaborative negotiation to resolve conflict, anger, confusion and misunderstanding. A2 	A2		

Integrated Undergraduate Research Curriculum (IUGRC)

Topics	At the end of the session the student should be able to:	Learning Domains	Teaching Strategy	Assessment Tool
Practical session 3	<p>In supervised session, after individual work sharing (PAL) on feedback and work assigned in last session (pr. session 2) on specific areas UEIH-Poster formation, students will be educated more on retrial and review of focused scientific information and extracting the relevant material for Posters: (Los): after this student will be able to</p> <ul style="list-style-type: none"> • Present the individual work assigned before whole group. • Understand more, the techniques used to access, retrieve and review and source of Scientific literature • Make search string and perform literature search using Boolean operators • Access scientific databases and carry out an effective literature review using a number of sources or databases (PubMed). • Hold discussions • Refine their work towards a UEIH-Poster formation 	C3 C3	Activity	MCQs

SECTION - IV

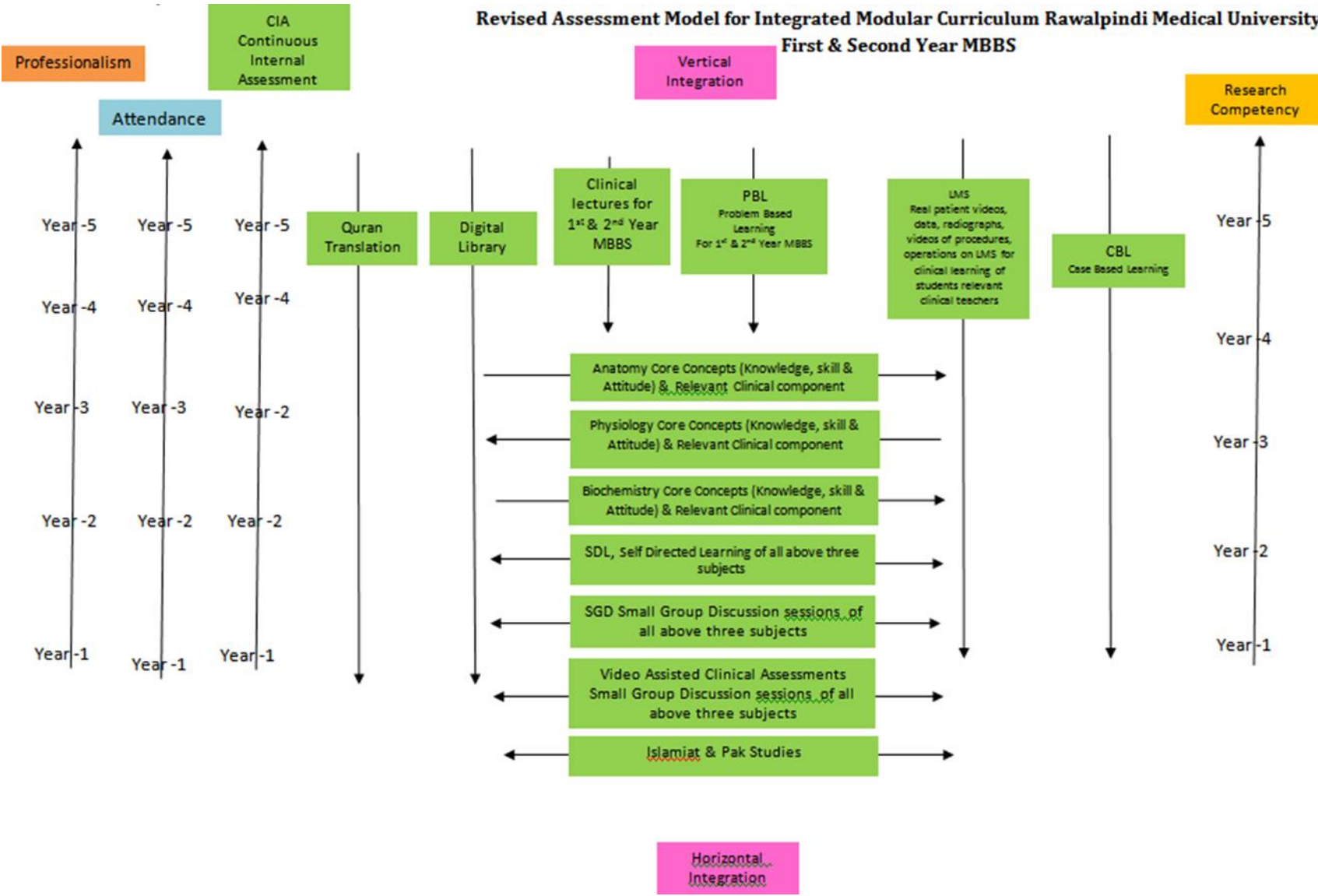
Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in Blood & Immunity Module**

Assessment Policies

Revised Assessment Model for Integrated Modular Curriculum Rawalpindi Medical University First & Second Year MBBS



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 - 74%	*75 - 80%	81 - 100%

90% is eligibility criteria for appearing in professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular, modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3 rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given the share according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based), modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in Blood and Immunity Module

Block	Sr #	Module Blood and Immunity Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-II	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures	Formative	15 Minutes				
	7	Assessment of Bioethics Lectures	Summative	2 Minutes				
	8	Assessment of IUGRC Lectures	Summative	10 Minutes				

Learning Resources

Subjects	Resources
Anatomy	<p>A. Gross Anatomy</p> <ol style="list-style-type: none"> 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III <p>B. Histology</p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. 3. Junqueira's Basic Histology <p>C. Embryology</p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition. <p>D. Website</p> <ol style="list-style-type: none"> 1. https://my.clevelandclinic.org/health/articles/9117-male-reproductive-system 2. https://teachmeanatomy.info/pelvis/female-reproductive-tract/ 3. https://www.kenhub.com/en/start/pelvis-and-perineum <p>E. YouTube</p> <ol style="list-style-type: none"> 1. https://www.youtube.com/watch?v=G0ZuCiCu3E 2. https://www.youtube.com/watch?v=50iuBgTQCrQ <p>F. HEC Digital Library</p> <ol style="list-style-type: none"> 1. https://www.sciencedirect.com/science/article/pii/S0015028220304350 2. https://link.springer.com/article/10.1007/s11356-021-16581-9 3. https://link.springer.com/chapter/10.1007/978-3-030-30766-0_25 <p>https://onlinelibrary.wiley.com/doi/abs/10.1111/and.13712</p> <ol style="list-style-type: none"> 3. https://www.youtube.com/watch?v=50iuBgTQCrQ

Physiology	<p>A. Textbooks:</p> <ol style="list-style-type: none"> 1. 1.Textbook of Medical Physiology by Guyton And Hall.14th edition. 2. 2.Ganong’s Review of Medical Physiology.25TH Edition <p>B. Reference Books:</p> <ol style="list-style-type: none"> 3. Human Physiology by Lauralee Sherwood 10th edition. 4. Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. 5. Best & Taylor Physiological Basis of Medical Practice 13th edition. <p>6. Berne & Levy Physiology 7th edition.</p> <p>C. Website</p> <ol style="list-style-type: none"> 1. https://www.ncbi.nlm.nih.gov/books/NBK531504/ 2. https://en.wikipedia.org/wiki/Inflammation 3. https://www.verywellhealth.com/signs-of-inflammation-4580526 4. https://www.hematology.org/education/patients/bleeding-disorders <p>D. YouTube</p> <ol style="list-style-type: none"> 1. https://youtu.be/cm8IK24RRvA 2. https://youtu.be/TelOcCkZX7c 3. https://youtu.be/ZLuACVIG77U 4. https://youtu.be/WFm9j1rNkQs <p>E. HEC Digital Library</p> <ol style="list-style-type: none"> 1. https://www.sciencedirect.com/science/article/pii/S0006497121070403 2. https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 3. https://www.sciencedirect.com/topics/medicine-and-dentistry/hemoglobinopathy 4. https://www.sciencedirect.com/topics/neuroscience/hemostasis <p>F. Physiology Journals</p> <ol style="list-style-type: none"> 1. https://accessmedicine.mhmedical.com/content.aspx?bookid=1366&sectionid=73247095 2. https://www.msmanuals.com/professional/hematology-and-oncology/anemias-caused-by-hemolysis/overview-of-hemoglobinopathies 3. https://derangedphysiology.com/main/cicm-primary-exam/required-reading/haematological-system/Chapter%2012/structure-function-production-and-fate-red-blood-cells 4. https://www.healthline.com/health/thermoregulation
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Biochemistry	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Harper's Illustrated Biochemistry 30th edition. 2. Lippincott biochemistry 8th edition <p>B. Reference Books</p> <ol style="list-style-type: none"> 1. Lehninger Principle of Biochemistry 8th edition. 2. Biochemistry by Devlin 7th edition. <p>C. Website</p> <ul style="list-style-type: none"> • https://chemed.chem.purdue.edu/genchem/topicreview/bp/1biochem/blood3.html https://www.ucsfhealth.org/medical-tests/hemoglobin-electrophoresis#:~:text=Many%20different%20types%20of%20hemoglobin,have%20small%20amounts%20of%20HbF • https://my.clevelandclinic.org/health/diseases/15367-adult-jaundice https://pubmed.ncbi.nlm.nih.gov/23016887/ http://www.vivo.colostate.edu/hbooks/pathphys/topics/ferritin.html https://www.osmosis.org/learn/Oxygen-hemoglobin_dissociation_curve https://www.sciencedirect.com/science/article/pii/S0891584999002233 https://pubmed.ncbi.nlm.nih.gov/9971870/ <p>D. YouTube</p> <ul style="list-style-type: none"> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3163784/ https://www.youtube.com/watch?v=f-0n_eOK4JE https://youtu.be/34u1sOLrgVo https://www.aacc.org/science-and-research/clinical-chemistry-trainee-council/trainee-council-in-english/pearls-of-laboratory-medicine/2012/porphyrias https://www.youtube.com/watch?v=gIACp5js4MU https://www.nottingham.ac.uk/nmp/sonet/rlos/bioproc/plasma_proteins/page_three.html https://www.youtube.com/watch?v=xMSEI1ad0z8 https://www.youtube.com/watch?v=QR_hcSow4OI https://www.youtube.com/watch?v=KCh-7Ghj0jY <p>E. HEC Digital Library</p> <ul style="list-style-type: none"> • https://doi.org/10.1016/j.bcmed.2017.10.006 • https://pubmed.ncbi.nlm.nih.gov/34200315/ • https://pubmed.ncbi.nlm.nih.gov/2650756/ https://pubmed.ncbi.nlm.nih.gov/30193516/ https://pubmed.ncbi.nlm.nih.gov/29126700/
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[https://www.mayoclinic.org/diseases-conditions/porphyria/symptoms-causes/syc-20356066#:~:text=Porphyria%20\(por%2DFEAR%2De,the%20body's%20organs%20and%20tissues.](https://www.mayoclinic.org/diseases-conditions/porphyria/symptoms-causes/syc-20356066#:~:text=Porphyria%20(por%2DFEAR%2De,the%20body's%20organs%20and%20tissues.)
<https://pubmed.ncbi.nlm.nih.gov/14765767/>
<http://ib.bioninja.com.au/options/option-d-human-physiology/d3-functions-of-the-liver/plasma-proteins.html>
<https://pubmed.ncbi.nlm.nih.gov/21544836/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3053509/>
<https://pubmed.ncbi.nlm.nih.gov/7027909/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4831249/>
<https://pubmed.ncbi.nlm.nih.gov/12055353/>

<https://pubmed.ncbi.nlm.nih.gov/20226990/>

F. Biochemistry Journals

- <https://pubs.acs.org/journal/bichaw>
- <https://academic.oup.com/jb>
- <https://www.hindawi.com/journals/bri/>

SECTION - V

Time Table

Integrated Clinically Oriented Modular Curriculum for first Year MBBS

Blood and Immunity Module Time Table

First Year MBBS

Session 2022-2023

Batch- 50

Blood and Immunity Module Team

Module Name : Blood and Immunity Module
 Duration of module : 05 Weeks
 Coordinator : Dr. Isma Riaz
 Co-coordinator : Dr. Isma Riaz
 Reviewed by : Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Isma Riaz (Senior Demonstrator of Biochemistry)
2.	Director DME	Prof. Dr. Rai Muhammad Asghar	2.	DME Focal Person	Dr. Sidra Hamid (Assistant Professor of Physiology)
3.	Convener Curriculum	Prof. Dr. Naeem Akhter	3.	Co-coordinator	Dr. Sajjad Hussain (Senior Demonstrator)
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf	4.	Co-Coordinator	Dr. Isma Riaz (Senior Demonstrator of Biochemistry)
5.	Additional Director DME	Prof. Dr. Ifra Saeed	5.	Co-coordinator	Dr. Kamil Tahir (Senior Demonstrator of Physiology)
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar			
7.	Chairperson Biochemistry	Dr. Aneela Jamil	DME Implementation Team		
8.	Focal Person Anatomy First Year MBBS	Prof. Dr. Ayesha Yousaf	1.	Director DME	Prof. Dr. Rai Muhammad Asghar
9.	Focal Person Physiology	Dr. Sidra Hamid	2.	Implementation Incharge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
10.	Focal Person Biochemistry	Dr. Aneela Jamil	3.	Deputy Director DME	Dr Shazia Zaib
11.	Focal Person Pharmacology	Dr. Zunera Hakim	4.	Module planner & Implementation coordinator	Dr. Sidra Hamid
12.	Focal Person Pathology	Dr. Asiya Niazi	5.	Editor	Muhammad Arslan Aslam
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir			
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom			
15.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar			

Discipline Wise Details of Modular Contents

Block	Subjects	Embryology	Histology	Gross Anatomy	CBL	SDL
II	• Anatomy	<ul style="list-style-type: none"> • Development of pharyngeal arches • Development of spleen • Development of thymus 	<ul style="list-style-type: none"> • Spleen • Thymus • Lymph nodes • Tonsils 	<p style="text-align: center;">Lower Limb</p> <ul style="list-style-type: none"> • Posterior compartment of leg to foot 	<ul style="list-style-type: none"> • Ankle sprain • Flat foot 	<ul style="list-style-type: none"> • Posterior compartment of leg and flexor retinaculum • Neurovascular organization of posterior compartment of leg • Foot joints • Ankle joints • Sole of foot • Spleen • Gait cycle
	• Physiology	<ul style="list-style-type: none"> • Plasma Proteins • Stages of erythropoiesis & factors affecting erythropoiesis • Hemoglobin & Hemoglobinopathies, Iron Metabolism • Red cell fragility, ESR & Red cell indices, Anemia & polycythemia • Fate of RBCs & Jaundice • Types of immunity, Physiology of innate immunity tolerance & auto immunity • Physiology of acquired immunity B-Cells • Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS • Composition of blood & Hemopoiesis • WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties • Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) • Blood coagulation • Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia) • Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body) • Physiological mechanism of temperature regulation • Role of Hypothalamus in temperature regulation • Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) • ABO & Rh Blood grouping system • Rh Blood grouping system and Erythroblastosis fetalis • Blood transfusion hazards • Tissue and organ transplantations 				
	• Biochemistry	<ul style="list-style-type: none"> • Heme synthesis • Porphyria • Breakdown of hemoglobin 				

	<ul style="list-style-type: none"> • Jaundice • Blood • Structure of hemoglobin and myoglobin • Types of Hemoglobin • Oxygen dissociation curve. • Abnormalities in Hemoglobin. • Hemoglobinopathies • Plasma proteins • Acute phase proteins & Albumin • Haptoglobin and transferrin. • Ferritin and hemosiderin • Ceruloplasmin. • Antiproteases and amyloidosis • Immunoglobulins • AIDs • Folic acid. • Vitamin B12 • Iron
<ul style="list-style-type: none"> • Bioethics & Professionalism 	<ul style="list-style-type: none"> • Activity I • Activity II • Activity III
<ul style="list-style-type: none"> • Research Club Activity (IUGRC) 	<ul style="list-style-type: none"> • Student practical session no 3
<ul style="list-style-type: none"> • Family Medicine 	<ul style="list-style-type: none"> • Approach to a Patient Aneamia
<ul style="list-style-type: none"> • Vertical components 	<ul style="list-style-type: none"> • The Holy Quran Translation Component
<ul style="list-style-type: none"> • Vertical Integration 	<p style="text-align: center;">Clinically content relevant to Blood & Immunity module</p> <ul style="list-style-type: none"> • Mediators of Inflammation (Pathology) • Anemia (Medicine) • Jaundice (Medicine) • Rh incompatibility and its significance -immune (Gynae & Obs)

Categorization of Modular Contents

Anatomy

Category A*	Category B**	Category C***			
		Demonstrations / SGD	CBL	SKL/Practical's	Self-Directed Learning (SDL)
<ul style="list-style-type: none"> General Embryology 	<ul style="list-style-type: none"> General Histology 	<ul style="list-style-type: none"> Posterior compartment of leg and flexor retinaculum Posterior compartment of leg (Neurovascular organization) Bones of the foot Dorsum of foot (Muscles and Neurovascular organization) Ankle joint (ankle sprain) Joints of foot Sole of foot (Muscles) Sole of foot (Neurovascular organization) Arches of foot Spleen Thymus and tonsils Radiology and surface marking 	<ul style="list-style-type: none"> Ankle sprain Flat foot 	<ul style="list-style-type: none"> Lymph node Spleen Thymus Tonsil 	<ul style="list-style-type: none"> Posterior compartment of leg and flexor retinaculum Neurovascular organization of posterior compartment of leg Foot joints Ankle joints Sole of foot Spleen Gait cycle

Category A*: By Professor

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resources of Department of Anatomy

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy department	01
2.	Associate Professor	01
3.	Assistant professor of Anatomy department (AP)	01
4.	Demonstrators of Anatomy department	04

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$2 * 04 = 08$ hours
2.	Small Group Discussions (SGD)	$2 * 16 = 32$ hours
3.	Practical / Skill Lab	$1.5 * 20 = 30$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$1 * 4 = 04$ hours
2.	Small Group Discussions (SGD)	$2 * 16 = 32$ hours
3.	Practical / Skill Lab	$1.5 * 4 = 6$ hours
4.	Self-Directed Learning (SDL)	$2 * 4 = 8$ hours

Physiology

Category A*	Category B**	Category C***				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
<ul style="list-style-type: none"> • Monocytes - macrophage system & lymphocytes • Process of inflammation and Lines of defense during inflammation 	<ul style="list-style-type: none"> • Plasma Proteins • Stages of erythropoiesis & factors affecting erythropoiesis • Hemoglobin & Hemoglobinopathies, Iron Metabolism • Red cell fragility, ESR & Red cell indices, Anemia & polycythemia • Fate of RBCs & Jaundice • Types of immunity, Physiology of innate immunity tolerance & auto immunity • Physiology of acquired immunity B-Cells • Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS • Composition of blood & Hemopoiesis • WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties • Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) • Blood coagulation • Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia) <ul style="list-style-type: none"> • Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy 			<ol style="list-style-type: none"> 1. Determination of Rh blood group 2. Determination of Clotting time (CT) 3. Determination of Bleeding time (BT) 4. Recording of Body Temperature 	<ol style="list-style-type: none"> 1. Functions & composition of blood, Hemopoiesis and Bone marrow 2. Hemoglobin & Hemoglobinopathies, Iron Metabolism 3. Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) 4. Physiological mechanism of temperature regulation 5. Stages Of Erythropoiesis Factors Affecting Erythropoiesis (First week) 6. Physiology of WBC (third week) 7. Physiology of platelets (Fourth week) 8. Blood transfusion hazards. Tissue and organ transplantations (Fifth week) 9. Disorders of temperature regulation (Fever, Heat stroke, 	<ol style="list-style-type: none"> 1. SDL On Campus Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) 2. Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia) 3. SDL Off Campus Composition of blood 4. Functions of Plasma Proteins 5. WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties 6. Monocytes - macrophage system & lymphocytes 7. Process of inflammation and Lines of defense

	<p>(Heparin, warfarin, Prevention of blood clotting outside the body)</p> <ul style="list-style-type: none"> • Physiological mechanism of temperature regulation • Role of Hypothalamus in temperature regulation • Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) • ABO & Rh Blood grouping system • Rh Blood grouping system and Erythroblastosis fetalis <ul style="list-style-type: none"> • Blood transfusion hazards. • Tissue and organ transplantations 				<p>Exposure of body to extreme cold) (Fifth week)</p>	<p>during inflammation</p> <ol style="list-style-type: none"> 8. Red cell fragility, ESR & Red cell indices, Anemia & polycythemia 9. Blood coagulation 10. ABO & Rh Blood grouping system
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Category A*: By HOD and Associate Professor

Category B:** By All (HOD, Associate, Assistant, Senior Demonstrators)

Category C*:** By Demonstrators and Residents

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	$11 \times 2 = 22$ hours
2.	Small Group Discussions (SGD)/CBL	20×1.5 hour = 30 hours + 6 hours = 36 hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	20×1.5 hour = 30 hours
5.	Self-Directed Learning (SDL)	$2 \times 1 = 2$ hours (on campus) $8 \times 1 = 8$ hours (off campus)

Biochemistry

Category A*	Category B**	Category C***			
LGIS	LGIS	PBL	CBL	Practical's	SGD
<ul style="list-style-type: none"> • Heme synthesis • Porphyria • Breakdown of hemoglobin <ul style="list-style-type: none"> • Jaundice 	<ul style="list-style-type: none"> • Blood • Structure of hemoglobin and myoglobin • Types of Hemoglobin • Oxygen dissociation curve. • Abnormalities in Hemoglobin. • Hemoglobinopathies • Plasma proteins • Acute phase proteins & Albumin • Haptoglobin and transferrin • Ferritin and hemosiderin • Ceruloplasmin. • Antiproteases and amyloidosis • Immunoglobulins • AIDs • Folic acid. • Vitamin B12 • Iron 		<ul style="list-style-type: none"> • Thalassemia • Jaundice 	<ul style="list-style-type: none"> • Estimation of Bilirubin by spectrophotometer • Estimation of total protein by spectrophotometer • How to draw blood technique • Haemin crystals 	<ul style="list-style-type: none"> • Types of Hb and oxygen dissociation curve • Iron

Category A*: By HOD and Assistant Professor

Category B:** By All (HOD, Assistant Professors, Senior Demonstrators)

Category C*:** (By All Demonstrators)

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1	Assistant professor of biochemistry department (AP)	01
2	Demonstrators of biochemistry department	07

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	$2 * 12 = 24$ hours	12
2.	Small Group Discussions (SGD)	$1.5 * 5 * 4 = 30$ hours	06
3.	Problem Based Learning (PBL)	Zero	zero
4.	Practical / Skill Lab	$1.5 * 5 * 4 = 30$ hours	6
5.	Self-Directed Learning (SDL)	-----	06

Blood and Immunity Module (First Week)

(24-07-2023 To 29-07-2023)

Date/Day	8:00am-9:00am	9:00am – 10:00am	10:00am-11:00am	11:00am-12:00pm	12:00-12:20pm	12:20pm – 2:00pm	Home Assignments (2HRS)		
24-07-23 MONDAY	SGD/DISSECTION		PBL-SESSION-I		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL physiology Composition of blood
	Posterior Compartment of Leg & Flexor Retinaculum		PBL Team-I (Physiology Batch Teachers of First Year MBBS)		Composition of blood & Hemopoiesis Dr Sheena (Even)	Plasma Proteins Dr. Sidra (Odd)			
25-07-2023 TUESDAY	SGD/DISSECTION		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Functions of plasma protein
	Posterior Compartment of Leg (Neurovascular Organization)		Types of Hb & O2 Dissociation Curve Dr. Isma (Even)	Heme Synthesis & Porphyrin Dr. Aneela (Odd)	Plasma Proteins Dr. Sidra (Even)	Composition of blood & Hemopoiesis Dr Sheena (Odd)			
26-07-2023 WEDNESDAY	SGD/DISSECTION		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Structure of hemoglobin, Types of Hb & O2 Dissociation Curve
	Bones of the foot		Heme Synthesis & Porphyrin Dr. Aneela (Even)	Types of Hb and structure of Hb and myoglobin Dr. Isma (Odd)	WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties Dr Sheena (Even)	Stages of erythropoiesis & factors affecting erythropoiesis Dr. Sidra (Odd)			
27-07-2023 THURSDAY	Ashura Holidays								
28-07-2023 FRIDAY	Ashura Holidays								
29-07-2023 SATURDAY	8:00 AM – 9:00 AM		9:00 AM – 10:00AM		10:00AM – 12:00 PM		12:00-12:20pm	12:20pm – 2:00pm	2HRS
	BIOCHEMISTRY (LGIS)		Practical & SGD/CBL		ANATOMY (LGIS)		PATHOLOGY (LGIS)		Break
	Types of Hb and structure of Hb and myoglobin Dr. Isma (Even)	Heme Synthesis & Porphyrin Dr. Aneela (Odd)	Practical & SGD/CBL Topics & venue mentioned at the end		Development of pharyngeal arches Prof. Dr. Ayesha Yousaf (even)	Development and histology Lymph node Dr. Mohtasham Hina (Associate prof.) (odd)	Mediators of inflammation Dr. Saeed (Even) Dr. Iqbal (Odd)		
Practical & SGD/CBL Topics & venue mentioned at the end		Practical & SGD/CBL Topics & venue mentioned at the end		Practical & SGD/CBL Topics & venue mentioned at the end		Practical & SGD/CBL Topics & venue mentioned at the end			

Topics for Practical with Venue						Topics for Small Group Discussion & CBLs With Venue								
<ul style="list-style-type: none"> Lymph node (Anatomy Histology Practical) Venue-Histology laboratory Draw of blood technique (Biochemistry Practical) Venue- Biochemistry laboratory Determination of Rh blood group (Physiology –practical) Venue – Physiology Lecture Hall No 5 						<ul style="list-style-type: none"> Physiology SGD - Functions & composition of blood, Hemopoiesis and Bone marrow (Basement)) Biochemistry SGD: Types of Hb and oxygen dissociation curve (Venue: Lecture Hall No 2) 								
Schedule for Practical / Small Group Discussion						Venue for first Year Batches for Anatomy Dissection / Small Group Discussion								
Days	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue					
Monday	C	B	E	A	D	A	01-90	Dr. Urooj Shah	Lecture Hall No. 04 Anatomy Lecture Hall					
Tuesday	D	C	A	B	E									
Wednesday	E	D	B	C	A	B	91-180	Dr. Qurat Ul Ain	Lecture Hall No. 03 Anatomy Lecture Hall					
Thursday	B	A	D	E	C	C	181- 270	Dr. Zaneera	New Lecture Theater complex no. 3					
Saturday	A	E	C	D	B	D	271 onwards	Dr. Ali Raza	New Lecture Theater complex no. 2					
Venue for first Year Batches for PBL & SGD Team-II						Sr. No	Batch	Roll no	Names of Teachers					
Batches	Roll No	Venue							Biochemistry					Physiology
									Monday	Tuesday	Wednesday	Thursday	Saturday	
Batch-A1	(01-35)	New Lecture Hall complex no.02		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Rahat B (Practical)	Dr. Almas C (Practical)	Dr. Nayyab D (Practical)	Dr. Nayyab A (Practical)	Dr. Rahat E (Practical)	Dr. Sheena
Batch-A2	(36-70)	New Lecture Hall complex no.03		Dr. Uzma Kiani		2.	Batch –B	71-140						Dr. Uzma
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)		Dr. Fahd Anwar		3.	Batch – C	141-210						Dr. Fahad
Batch-B2	(106-140)	Conference Room (Basement)		Dr. Fareedullah		4.	Batch –D	211-280	Dr. Nayyab D (SGD)	Dr. Rahat E (SGD)	Dr. Almas A (SGD)	Dr. Isma C (SGD)	Dr. Nayyab E (SGD)	Dr. Maryam Abbas
Batch-C1	(141-175)	Lecture Hall no.04 (Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch -E	281-onwards						Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05 (Basement)		Dr. Nayab (PGT Physiology)										
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)										
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shazia Noreen (SGD)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03					
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02					
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)										
Topic Details of SDL Biochemistry														
<ul style="list-style-type: none"> Types of Hb O2 Dissociation Curve 														

Blood and Immunity Module (Second Week)

(31-07-2023 To 05-08-2023)

Date/Day	8:00am-9:00am	9:00am – 10:00am	10:00am-11:00am	11:00am-12:00pm	12:00- 12:20pm	12:20pm – 2:00pm	Home Assignments (2HRS)			
31-07-23 MONDAY	SGD/DISSECTION		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		B r e a k			
	Dorsum of Foot (Muscles and Neurovascular Organization)		Development of pharyngeal arches	Development and histology Lymph nod	Stages of Erythropoiesis Factors Affecting Erythropoiesis	WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties		Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties	
Prof. Dr. Ayesha Yousaf (Odd)			Dr. Mohtasham Hina (Associate prof.) (Even)	Dr. Sidra (Even)	Dr. Sheena (Odd)					
01-08-2023 TUESDAY	/DISSECTION/CBL		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Monocytes - macrophage system & lymphocytes	
	Ankle Joint (Ankle Sprain)		Hemoglobinopathies	Heme degradation & Jaundice	Monocytes - macrophage system & lymphocytes	Hemoglobin & Hemoglobinopathies, Iron Metabolism				
Dr. Nayyab (Odd)			Dr. Aneela (Even)	Prof. Dr. Samia Sarwar / Dr. Sheena (Even)	Dr. Sidra (Odd)					
02-08-2023 WEDNESDAY	SGD/DISSECTION		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		Practical & SGD/CBL Topics & venue mentioned at the end	BIOCHEMISTRY SDL Heme Synthesis & Porphyrin		
	Joints of Foot		Aids	Plasma proteins functions, Albumin	Hemoglobin & Hemoglobinopathies, Iron Metabolism	Monocytes -macrophage system & lymphocytes				
Dr. Almas (Even)			Dr. Isma (Odd)	Dr. Sidra (Even)	Prof. Dr. Samia Sarwar / Dr. Sheena (Odd)					
03-08-2023 THURSDAY	SGD/DISSECTION		PBL		PHYSIOLOGY (LGIS)		Practical & SGD/CBL Topics & venue mentioned at the end	BIOCHEMISTRY SDL Plasma proteins functions, Albumin, AIDs		
	Dissection		PBL session 2		Process of inflammation and Lines of defense during inflammation	Red cell fragility, ESR & Red cell indices, Anemia & polycythemia				
Prof. Dr. Samia Sarwar / Dr. Sheena (Even)					Dr. Sidra (Odd)					
04-08-2023 FRIDAY	8:00 AM – 9:00 AM		9:00 AM – 10:00AM		10:00AM– 11:00AM		11:00AM—12:00PM			
	Family Medicine (LGIS)		QURAN TRANSLATION		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)			
	Anemia		Muaamlaat-3	Muaasharat-1	Aids	Plasma proteins functions, Albumin	Red cell fragility, ESR & Red cell indices, Anemia & polycythemia	Process of inflammation and Lines of defense during inflammation		
	Dr. Umer Daraz (Even)	Dr. Iqra (Odd)	Mufti Naeem (Even)	Abdul Wahid (Odd)	Dr. Almas (Odd)	Dr. Isma (Even)	Dr. Sidra (Even)	Prof. Dr. Samia Sarwar / Dr. Sheena (Odd)		
8:00 AM – 9:00 AM		9:00 AM – 10:00AM		10:00AM – 11:00 AM		11:00AM – 12:00 PM		12:00- 12:20pm	12:20pm – 2:00pm	2HRS
05-08-2023 SATURDAY	SGD/DISSECTION		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy joints of Foot	
	Sole of Foot (Muscles)		Vit K	Haptoglobin, ceruloplasmin	Fate of RBCs & Jaundice	Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)				
Dr. Almas (Even)			Dr. Isma (Odd)	Dr. Sidra (Odd)	Dr. Fared (Even)					

Topics for Practical with Venue						Topics for Small Group Discussion & CBLs With Venue								
<ul style="list-style-type: none"> Spleen (Anatomy Histology Practical) Venue-Histology Laboratory Estimation of bilirubin by Spectrophotometer (Biochemistry Practical) Venue- Biochemistry Laboratory Determination of Clotting time (CT) (Physiology Practical) Venue – Physiology Lab 						<ul style="list-style-type: none"> Physiology SGD- Hemoglobin & Hemoglobinopathies, Iron Metabolism (Venue: Lecture Hall No 5) Biochemistry CBL – Thalassemia (Lecture Hall No 2) 								
Schedule for Practical / Small Group Discussion						Venue for first Year Batches for Anatomy Dissection / Small Group Discussion								
Days	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue					
Monday	C	B	E	A	D	A	01-90	Dr. Urooj Shah	Lecture Hall No. 04 Anatomy Lecture Hall					
Tuesday	D	C	A	B	E									
Wednesday	E	D	B	C	A	B	91-180	Dr. Qurat Ul Ain	Lecture Hall No. 03 Anatomy Lecture Hall					
Thursday	B	A	D	E	C	C	181- 270	Dr. Zaneera	New Lecture Theater complex no. 3					
Saturday	A	E	C	D	B	D	271 onwards	Dr. Ali Raza	New Lecture Theater complex no. 2					
Venue for first Year Batches for PBL & SGD Team-II						Sr. No	Batch	Roll no	Names of Teachers					
Batches	Roll No	Venue							Biochemistry					Physiology
									Monday	Tuesday	Wednesday	Thursday	Saturday	
Batch-A1	(01-35)	New Lecture Hall complex no.02		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas B (Practical)	Dr. Almas C (Practical)	Dr. Rahat D (Practical)	Dr. Almas A (Practical)	Dr. Almas E (Practical)	Dr. Sheena
Batch-A2	(36-70)	New Lecture Hall complex no.03		Dr. Uzma Kiani		2.	Batch –B	71-140						Dr. Uzma
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)		Dr. Fahd Anwar		3.	Batch – C	141-210						Dr. Fahad
Batch-B2	(106-140)	Conference Room (Basement)		Dr. Fareedullah		4.	Batch –D	211-280	Dr. Nayyab D (SGD)	Dr. Uzma E (SGD)	Dr. Uzma A (SGD)	Dr. Uzma C (SGD)	Dr. Uzma E (SGD)	Dr. Maryam Abbas
Batch-C1	(141-175)	Lecture Hall no.04 (Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch -E	281-onwards						Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05 (Basement)		Dr. Nayab (PGT Physiology)										
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)										
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shazia Noreen (SGD)										
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)										
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)										
Topic Details of SDL Biochemistry						Venues for Large Group Interactive Session (LGIS) and SDL								
<ul style="list-style-type: none"> Structure of hemoglobin Types of Hb O₂ Dissociation Curve 						Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03					
						Even Roll Number			New Lecture Hall Complex Lecture Theater # 02					

Blood and Immunity Module (Third Week)

(07-08-2023 To 12-08-2023)

Date/Day	8:00am-9:00am	9:00am – 10:00am	10:00am-11:00am	11:00am-12:00pm	12:00-12:20pm	12:20pm – 2:00pm	Home Assignments (2HRS)				
07-08-2023 MONDAY	SGD/DISSECTION		Biochemistry (LGIS)		PHYSIOLOGY (LGIS)		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Process of inflammation and Lines of defense during inflammation		
	Sole of Foot (Neurovascular Organization)		Vitamin k	Haptoglobin, ceruloplasmin	Fate of RBC & Jaundice	Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)					
08-08-2023 TUESDAY	SGD/DISSECTION		BIOMEDICAL ETHICS		PHYSIOLOGY (LGIS)		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Red cell fragility, ESR & Red cell indices, Anemia & polycythemia		
	Dissection		Activity 1		Blood coagulation	Types of immunity, Physiology of innate immunity tolerance & auto immunity					
09-08-2023 WEDNESDAY	SGD/DISSECTION		ANATOMY(LGIS)		PHYSIOLOGY (LGIS)		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Structure of hemoglobin Folic acid & Vitamin B- 12		
	Arches of Foot		Histology of Thymus and Tonsils	Histology and Development of Spleen	Types of immunity, Physiology of innate immunity tolerance & auto immunity	Blood coagulation					
10-08-2023 THURSDAY	SGD/DISSECTION		Physiology (LGIS)		Physiology (LGIS)		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end Online SDL Evaluation	SDL Biochemistry Heme synthesis Vitamin K		
	Gait cycle		Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)	Physiology of acquired immunity B- Cells	Physiology of acquired immunity B-Cells	Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)					
11-08-2023 FRIDAY	8:00 AM – 9:00 AM		9:00 AM – 10:00AM		10:00AM– 11:00AM		11:00AM—12:00PM		B r e a k	SDL Anatomy Sole of Foot	
	Biochemistry (LGIS)		QURAN TRANSLATION		Physiology (LGIS)		ANATOMY(LGIS)				
	Vitamin 9 and vitamin B12	Transferrin, ferritin	Muaamlaat-3	Muaasharat-1	Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body)	Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto- immune diseases and AIDS	Histology of Thymus and Tonsils	Histology and Development of Spleen			
	Dr. Almas (Even)	Dr. Isma (Odd)	Mufti Naeem (Odd)	Abdul Wahid (Even)	Dr. Fareed (Even)	Dr. Sidra (Odd)	Dr. Mohtasham Hina (Associate prof.) (Odd)	Dr. Arslan (Asst. Prof (Even)			
12-08-2023 SATURDAY	8:00 AM – 9:00 AM		9:00 AM – 10:00AM		10:00AM – 11:00 AM		11:00AM – 12:00 PM		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	2HRS
	SGD/DISSECTION		Biochemistry (LGIS)		Physiology (LGIS)		Physiology (LGIS)		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Spleen
Thymus, Tonsils and Spleen		Vitamin 9 and vitamin B12	Transferrin, ferritin		Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS	Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body)					
			Dr. Almas (Odd)	Dr. Isma (Even)		Dr. Sidra (Even)		Dr. Fareed (Odd)			

Topics for Practical with Venue						Topics for Small Group Discussion & CBLs With Venue								
<ul style="list-style-type: none"> Thymus (Anatomy Histology Practical) Venue-Histology Laboratory Quantitative estimation of serum total proteins (Biochemistry Practical) Venue- Biochemistry Laboratory Determination of Bleeding time (BT) (Physiology Practical) Venue – Physiology Lab 						<ul style="list-style-type: none"> Physiology SGD- Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR (Venue: Lecture Hall No 5) Biochemistry CBL – Jaundice (Lecture Hall No 2) 								
Schedule for Practical / Small Group Discussion						Venue for first Year Batches for Anatomy Dissection / Small Group Discussion								
Days	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue					
Monday	C	B	E	A	D	A	01-90	Dr. Urooj Shah	Lecture Hall No. 04 Anatomy Lecture Hall					
Tuesday	D	C	A	B	E	B	91-180	Dr. Qurat Ul Ain	Lecture Hall No. 03 Anatomy Lecture Hall					
Wednesday	E	D	B	C	A									
Thursday	B	A	D	E	C	C	181- 270	Dr. Zaneera	New Lecture Theater complex no. 3					
Saturday	A	E	C	D	B	D	271 onwards	Dr. Ali Raza	New Lecture Theater complex no. 2					
Venue for first Year Batches for PBL & SGD Team-II						Sr. No	Batch	Roll no	Names of Teachers					
Batches	Roll No	Venue						Biochemistry					Physiology	
								Monday	Tuesday	Wednesday	Thursday	Saturday		
Batch-A1	(01-35)	New Lecture Hall complex no.02			Dr. Sheena Tariq	1.	Batch – A	01-70	Dr. Rahat B (Practical)	Dr. Almas C (Practical)	Dr. Rahat D (Practical)	Dr. Almas A (Practical)	Dr. Rahat E (Practical)	Dr. Sheena
Batch-A2	(36-70)	New Lecture Hall complex no.03			Dr. Uzma Kiani	2.	Batch –B	71-140						Dr. Uzma
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)			Dr. Fahd Anwar	3.	Batch – C	141-210	Dr. Uzma D (SGD)	Dr. Uzma E (SGD)	Dr. Nayyab A (SGD)	Dr. Uzma C (SGD)	Dr. Nayyab E (SGD)	Dr. Fahad
Batch-B2	(106-140)	Conference Room (Basement)			Dr. Fareedullah	4.	Batch –D	211-280						Dr. Maryam Abbas
Batch-C1	(141-175)	Lecture Hall no.04 (Basement)			Dr. Maryam Abbas (PGT Physiology)	5.	Batch -E	281-onwards						Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05 (Basement)			Dr. Nayab (PGT Physiology)									
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)			Dr. Iqra Ayub (PGT Physiology)									
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)			Dr. Shazia Noreen (SGD)									
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)			Dr. Izzah (PGT Physiology)									
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology			Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)									
Topic Details of SDL Biochemistry														
<ul style="list-style-type: none"> Structure of hemoglobin Types of Hb O2 Dissociation Curve 														

Blood and Immunity Module (Fourth Week)
(14-08-2023 To 19-08-2023)

Date/Day	8:00am-9:00am	9:00am – 10:00am	10:00am-11:00am	11:00am-12:00pm	12:00-12:20pm	12:20pm – 2:00pm	Home Assignments (2HRS)	
14-08-2023 MONDAY	Independence Day							
15-08-2023 TUESDAY	MEDICINE (LGIS)		BIO MEDICAL ETHICS		PHYSIOLOGY (LGIS)		Practical & SGD/CBL Topics & venue mentioned at the end	
	Jaundice		(CLUB ACTIVITY 2)		ABO & Rh Blood grouping system	Physiological mechanism of temperature regulation		Physiological mechanism of temperature regulation	ABO & Rh Blood grouping system
	Dr. Umer Daraz (Even)	Dr. Iqra (Odd)			Dr. Fahad (Even)	Dr. Shazia (Odd)	Dr. Shazia (Even)	Dr. Fahad (Odd)
16-08-2023 WEDNESDAY	SGD/DISSECTION		Physiology (LGIS)		Physiology (LGIS)		Practical & SGD/CBL Topics & venue mentioned at the end	
	Radiology and Surface Marking		Rh Blood grouping system and Erythroblastosis fetalis	Role of Hypothalamus in temperature regulation	Role of Hypothalamus in temperature regulation	Rh Blood grouping system and Erythroblastosis fetalis		
			Dr. Fahad (Even)	Dr. Shazia (Odd)	Dr. Shazia (Even)	Dr. Fahad (Odd)		
17-08-2023 THURSDAY	GYNAE OBS (LGIS)		Physiology (LGIS)		IUGRC			
	Rh incompatibility and its significance		Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold)	Blood transfusion hazards. Tissue and organ transplantations	Student practical session no 3			
	Dr. Shama (Even)	Dr. Ruqqia (Odd)	Dr. Shazia (Odd)	Dr. Fahad (Even)			Practical & SGD/CBL Topics & venue mentioned at the end	
18-08-2023 FRIDAY	8:00 AM – 9:00 AM		9:00 AM – 10:00AM		10:00AM – 11:00AM		11:00AM – 12:00PM	
	BIO MEDICAL ETHICS		QURAN TRANSLATION		Physiology (LGIS)		Biochemistry (LGIS)	
	(CLUB ACTIVITY-3)		Muaasharat-2	Muaamlaat-4	Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold)	Blood transfusion hazards. Tissue and organ transplantations	Immunoglobulins	Iron
		Abdul Wahid (Even)	Mufti Naeem (Odd)	Dr. Shazia (Even)	Dr. Fahad (Odd)	Dr. Uzma (Even)	Dr. Isma Riaz (Odd)	
19-08-2023 SATURDAY	8:00 AM – 9:00 AM		9:00 AM – 10:00AM		10:00AM – 11:00 AM		11:00AM – 12:00 PM	
	SGD/DISSECTION		Biochemistry (LGIS)		Practical & SGD/CBL		Break	Practical & SGD/CBL Topics & venue mentioned at the end
Dissection		Immunoglobulins	Iron	Practical & SGD// CBLof 14 th August batch				
		Dr. Uzma (Odd)	Dr. Isma (Even)	Topics & venue mentioned at the end		2HRS	SDL Anatomy Gait Cycle	

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Topics for Practical with Venue						Topics for Small Group Discussion & CBLs With Venue							
<ul style="list-style-type: none"> Tonsils (Anatomy Histology Practical) Venue-Histology Laboratory Haemin crystals (Biochemistry Practical) Venue- Biochemistry Laboratory Recording of Body temperature (BT) (Physiology Practical) Venue – Physiology Lab 						<ul style="list-style-type: none"> Physiology SGD- Physiological mechanism of temperature regulation (Venue: Lecture Hall No 5) Biochemistry CBL – iron (Lecture Hall No 2) 							
Schedule for Practical / Small Group Discussion						Venue for first Year Batches for Anatomy Dissection / Small Group Discussion							
Days	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue				
Monday	C	B	E	A	D	A	01-90	Dr. Urooj Shah	Lecture Hall No. 04 Anatomy Lecture Hall				
Tuesday	D	C	A	B	E								
Wednesday	E	D	B	C	A	B	91-180	Dr. Qurat Ul Ain	Lecture Hall No. 03 Anatomy Lecture Hall				
Thursday	B	A	D	E	C	C	181- 270	Dr. Zaneera	New Lecture Theater complex no. 3				
Saturday	A	E	C	D	B	D	271 onwards	Dr. Ali Raza	New Lecture Theater complex no. 2				
Venue for first Year Batches for PBL & SGD Team-II						Sr. No	Batch	Roll no	Names of Teachers				
Batches	Roll No	Venue				Biochemistry					Physiology		
						Monday	Tuesday	Wednesday	Thursday	Saturday			
Batch-A1	(01-35)	New Lecture Hall complex no.02		Dr. Sheena Tariq		Dr. Almas B (Practical)	Dr. Rahat C (Practical)	Dr. Almas D (Practical)	Dr. Almas A (Practical)	Dr. Rahat E (Practical)	Dr. Sheena		
Batch-A2	(36-70)	New Lecture Hall complex no.03		Dr. Uzma Kiani							Dr. Uzma		
Batch-B1	(71-105)	Lecture Hall no.02 (Basement)		Dr. Fahd Anwar		Dr. Uzma D (SGD)	Dr. Nayyab E (SGD)	Dr. Uzma A (SGD)	Dr. Isma C (SGD)	Dr. Nayyab E (SGD)	Dr. Fahad		
Batch-B2	(106-140)	Conference Room (Basement)		Dr. Fareedullah							Dr. Maryam Abbas		
Batch-C1	(141-175)	Lecture Hall no.04 (Basement)		Dr. Maryam Abbas (PGT Physiology)		Dr. Uzma D (SGD)	Dr. Nayyab E (SGD)	Dr. Uzma A (SGD)	Dr. Isma C (SGD)	Dr. Nayyab E (SGD)	Dr. Fareed		
Batch-C2	(176-210)	Lecture Hall no.05 (Basement)		Dr. Nayab (PGT Physiology)									
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)		Venues for Large Group Interactive Session (LGIS) and SDL							
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shazia Noreen (SGD)		Odd Roll Numbers		New Lecture Hall Complex Lecture Theater # 03					
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)		Even Roll Number		New Lecture Hall Complex Lecture Theater # 02					
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)									
Topic Details of SDL Biochemistry													
<ul style="list-style-type: none"> Structure of hemoglobin Types of Hb O₂ Dissociation Curve 													

Blood and Immunity Module (Fifth Week)
(21-08-2023 To 26-08-2023)

Date/time	9:00am - 12:00pm	12:00-02:00pm
21-08-2023 MONDAY	Anatomy Theory Paper	
22-08-2023 TUESDAY	Physiology Theory Paper & Video Assisted Quiz	
23-08-2023 WEDNESDAY	Biochemistry Theory Paper & Allied	
24-08-2023 THURSDAY	Anatomy /Physiology Viva Voce	
25-08-2023 FRIDAY	Anatomy /Physiology Viva Voce	
26-08-2023 SATURDAY	SDL For Upcoming Module	

Note: Timetable Subject to Change According To The Current Circumstances

(Logistic details of Assessments will be notified separately)

SECTION VI

Table of Specification (TOS) For Blood & Immunity Module Examination for First Year MBBS

Sr. #	Discipline	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Viva voce	Integrated OSPE	Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3			
1.	Anatomy	20	10	5	5	4	20	1	1	2	60	45 (15 Stations)	145
2.	Physiology	30	18	9	3	4	20	1	2	1	50	18	118
3.	Biochemistry	13	5	4	1	3	10	0.5	1.5	-	-	10	33
Total Marks												296	
Table of Specification for Clinical Subjects													
1.	Quran translation	10 (2SEQs)										10	
2.	Research, Artificial Intelilience & Innovation	5										5	
3.	Family Medicine	2										2	
5.	Medicine	5										5	
6.	Pathology	5										5	
7.	Gynae/ Obs	5										5	
8.	Bioethics & Professionalism	2										2	
Grand Total												34	
Grand Total											330		

Table of Specification for Gross OSPE
Anatomy

Block II- Lower Limb					
1	Bones and Joints of Hip and thigh Region	30%	50%	20%	3
2	Muscles and Neurovascular of Hip				3
3	Muscles and Neurovascular of Anterior and medial Compartment of Thigh				3
4	Muscles and Neurovascular of Posterior Compartment of Thigh				3
5	Bones and Joints of knee and leg				3
6	Muscles and Neurovascular of Anterior Compartment of Leg				3
7	Muscles and Neurovascular of Lateral and Posterior Compartment				3
8	Bones and Joints of ankle and Foot				3
9	Muscles and Neurovascular of Foot				3
10	Radiology of Lower Limb				3
Total					30

Table of Specification for Integrated OSPE
Anatomy

Block II- MSK-II and Blood & Immunity					
Development of Musculoskeletal System, vertebral column, and limbs					3
Development of Lymphoid Organs		30%	50%	20%	3
Microscopic anatomy of muscle and skin					3
Microscopic anatomy of Lymphoid Organs					3
Practical Copy					3
Total					15

Physiology

Block – II (MSK-II & Blood Module)							
1.	Block – II (MSK-II & Blood Module)	Determination of Total leukocyte Count (TLC)				1 A	1
2.		Estimation of Red Blood Cell (RBC) count				1 B	1
3.		Determination of platelet count				1 C	1
4.		Determination of Differentiate leukocyte Count (DLC)	30%	50%	20%	2	3
5.		Determination of ABO blood groups				3 A	1.5
6.		Determination of Rh blood groups				3 B	1.5
7.		Determination of Clotting Time (CT)				4 A	1.5
8.		Determination of Bleeding Time (BT)				4 B	1.5
9.		Recording of body temperature				5 A	1.5
10.		Demonstration of Triple response				5 B	1.5
11.		Practical notebook / sketch copy				6	3
						Total	18

Biochemistry

Block – II (MSK-II & Blood Module)		Color test for amino acids(observed)	90%	10%	1	2	
1.	Block – II (MSK-II & Blood Module)	Biuret test and ninhydrin	100%		2	2	
2.		Quantitative estimation of serum total proteins			1B	1	
3.		Heat coagulation	100%		2A	1	
4.		Paper chromatography			2B	1	
5.		Blood draw technique	100%		3	2	
6.		Quantitative estimation of serum bilirubin	100%		4	2	
7.		Hemin crystal					
8.		instruments		90%	10%	4	2
9.		Practical notebook		80%	20%	5	2
						Total	10

Annexure I

(Sample MCQ, SEQ & OSPE Papers)

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
1st Year MBBS MCQs Module Exam (BLOOD & IMMUNITY)

1. A 21-year-old boy had a motorcycle accident. On x-ray groove in the lower surface of the cuboid bone was destroyed. Which of the following muscle tendons is most likely damaged?

- a. Flexor hallucis longus
- b. Peroneus brevis
- c. Peroneus longus
- d. Tibialis anterior
- e. Tibialis posterior

3. A patient reported to hospital with the complaint of difficulty in walking and pain in the left leg. He gave history of an audible snap during a forceful push-off emergency car breaks (plantarflexion with the knee extended). It was followed immediately by sudden calf pain and dorsiflexion of the foot. He might be suffering from?

- a. Calcaneal tendinitis
- b. Ruptured calcaneal tendon
- c. Gastrocnemius strain
- d. Common peron

5. Student of first year was asked to auscultate the posterior tibial pulse during assessment. While auscultating which landmarks are important?

- a. Between lateral malleolus and medial border of calcaneal tendon
- b. Between medial malleolus and medial border of calcaneal tendon
- c. Between lateral malleolus and lateral border of calcaneal tendon
- d. Between 1st and 2nd metatarsals
- e. Between 2nd and 3rd metatarsals

2. A professional runner without any history of trauma complaint of pain in the sole of foot and heel. The pain was aggravated during start of walk and after sitting but relieved after 5-10 minutes of activity. His condition could be due to

- a. Deep infection of the foot
- b. Plantar fasciitis
- c. Fatigue
- d. Arthritis of ankle joint
- e. Sprain of the ankle joint

4. During medical examination, students were asked to examine patient with “tarsal tunnel syndrome”. Which of the following symptoms are commonly associated with this?

- a. Sharp pain radiating down the front of the thigh.
- b. Tingling and numbness along the lateral side of the foot.
- c. Weakness during ankle joint extension
- d. Burning sensation along the inner side of leg and sole of the foot.
- e. Flattening of lateral arch of the foot

RAWALPINDI MEDICAL UNIVERSITY, RWP
PHYSIOLOGY DEPARTMENT
1st Year MBBS MCQs Module Exam (BLOOD & IMMUNITY)

1. Maintenance of blood viscosity is mainly a function of :

- a. Plasma proteins
- b. Erythrocytes
- c. Thrombocytes
- d. Albumin
- e. Gamma globulins

3. A Rh-negative mother having her second pregnancy terminated because of fetal death due to Rh-incompatibility, the type of agglutinin involved in this case would be:

- a. IgM
- b. IgG
- c. IgE
- d. IgA
- e. IgD

5. When blood is allowed to clot, the fluid left behind is known as :

- a. Plasma
- b. Lymph
- c. Tissue fluid
- d. Tissue gel
- e. Serum

2. The HIV virus mainly targets the immune cells which are back bone of cell mediated immunity , these cells are:

- a. B-cells
- b. Cytotoxic T cells
- c. Helper T cells
- d. Memory cells
- e. Suppressor T cells

4. Thalasemic children usually suffer from iron over load. Insoluble storage form of iron secondary to iron-overload is termed as:

- a. Ferritin
- b. Apoferritin
- c. Hemopexin
- d. Hemosiderin
- e. Ferroheme

RAWALPINDI MEDICAL UNIVERSITY, RWP
PHYSIOLOGY DEPARTMENT
1st Year MBBS SEQs Module Exam (BLOOD & IMMUNITY)

- Q.1 Discuss three different causes of anemia and what is obligatory degradation of proteins and how it can be prevented? (3,2)
- Q.2 Define Immunity. What are different classifications of granulocytes (write any two). Write four causes of neutrophilia? (1,2,2)
- Q.3 Define Land Steiners Law, Secretors and non- Secretors. Write down briefly on Incompatible blood transfusion, stating two complications of incompatible blood transfusion. (3,2)

RAWALPINDI MEDICAL UNIVERSITY, RWP
BIOCHEMISTRY DEPARTMENT
1st Year MBBS SEQs Module Exam (BLOOD & IMMUNITY)

1. Iron is transported in the body in the form of:
 - a. Ferritin
 - b. Hemosiderin
 - c. Transferrin
 - d. Hemoglobin
 - e. Myoglobin
2. The normal serum value for total bilirubin is up to:
 - a. 10mg/dl
 - b. 5mg/dl
 - c. 50mg/dl
 - d. 1mg/dl
 - e. 15mg/dl
3. Chocolate cyanosis is a classic presentation of
 - a. Thalassemia
 - b. Hemoglobin SC disease
 - c. Hemoglobin C disease
 - d. Sickle cell anemia
 - e. Methemoglobinemia
4. Vitamin K is required for
 - a. Change of prothrombin into thrombin
 - b. Synthesis of prothrombin
 - c. Change of fibrinogen into fibrin
 - d. Formation of thromboplastin
 - e. Fibrinolysis

SEQ

- Q. a. Explain the functions and clinical significance of Albumin. 2.5
- b. Describe pathway of synthesis of heme. 2.5

1. ---Includes rules of conduct that may be used to regulate our activities concerning the biological world.

- a. Bio-piracy
- b. Biosafety
- c. Bioethics
- d. Bio-patents
- e. Bio-logistic

3. Following is not code of ethics.

- a. Integrity
- b. Objectivity
- c. Confidentiality
- d. Behaviour
- e. Autonomy

5. -----Principle requiring that physicians provide, positive benefits

- a. Justice
- b. Autonomy
- c. Beneficence
- d. Veracity
- e. Fidelity

2. The right of patients having self-decision is called.

- a. Justice
- b. Autonomy
- c. Beneficence
- d. Veracity
- e. Fidelity

4. -----in the context of medical ethics, if it's fair and balanced

- a. Justice
- b. Autonomy
- c. Beneficence
- d. Veracity
- e. Fidelity

Rawalpindi Medical University Department of Anatomy
Block-II OSPE 1st Year MBBS

Station No. 1 (Observed Station)

Histology sketch copy will be assessed for

- a. Complete index (1)
- b. Complete and signed diagrams (1)
- c. 2 ID points mentioned with each diagram (1)
- d. Punctuality (1)
- e. Neatness (1)

Station No. 2 (Gross Anatomy)

Core Concept - Learning Domain (C2)

- I. On the cadaver/model,
 - a. Identify Red (1)
 - b. Identify Yellow (1)
 - c. Identify Green (1)

Rawalpindi Medical University Department of Physiology
Block-II OSPE 1st Year MBBS

Station No.1 Time Allowed: 2 Minutes

- a. What is the preferred dilution ratio for RBC count & platelet count? (0.5, 0.5)
- b. Write the composition of Hayem's Fluid. (1)
- c. How would you interpret a platelet count of 80,000 /mm³? (1)

Station No.2 Time Allowed: 2 Minutes

- a. Identify the cells labeled A & B. (0.5)
- b. Points of Identification. (1.5)
- c. What is the power of objective lens used for identifying the cells and how much (0.5, 0.5)
was the total magnification achieved?

Rawalpindi Medical University Department of Biochemistry
Block-II OSPE 1st Year MBBS

Station No. 2

Time Allowed: 2 Mins

Observed station

Perform Biuret test 03

Station No. 1

Time Allowed: 2 Mins

Observed Station

Perform Lead Sulfide test. 03

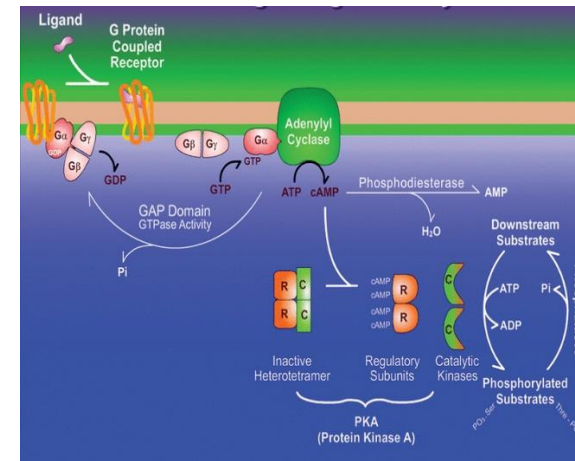
Rawalpindi Medical University Department of Anatomy
Block-II Video Assisted Quiz 1st Year MBBS

- I. What is this clinical condition? (1)
- II. Describe its features with the muscle affected (4)



Rawalpindi Medical University Department of Biochemistry
Block-II Video Asisted Quiz 1st Year MBBS

1. Name this signaling pathway and ligands that bind to GPCR. (2)
2. What is the mechanism of action of G proteins? (2)
3. Name the drugs/compounds that inhibit phosphodiesterase (1)





Cardiovascular System Module

Study Guide

First Year MBBS 2022 - 2023





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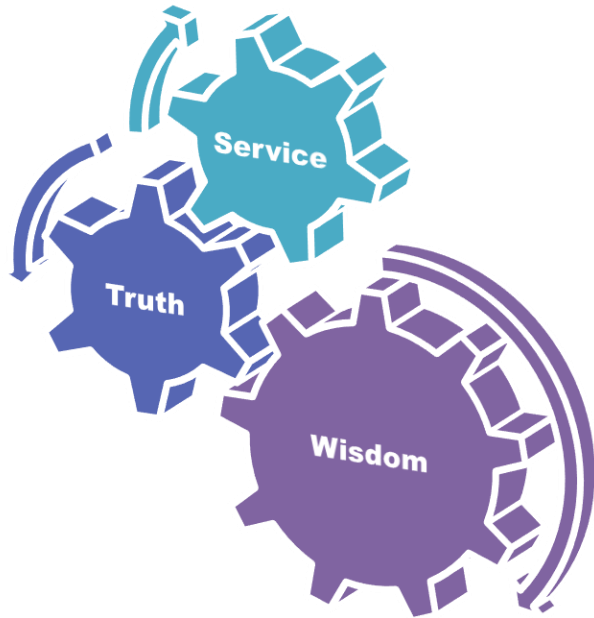
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University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

First Year MBBS 2023

Study Guide

CVS Module

Discipline wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
III1	<ul style="list-style-type: none"> Anatomy Biochemistry 	<ul style="list-style-type: none"> Heart & Vessels 	<ul style="list-style-type: none"> Cardiovascular System 	<ul style="list-style-type: none"> Heart & Vessels 	Mediastinum, Heart, Great Vessels
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> Carbohydrate chemistry, Lipid chemistry The Heart as a Pump and Function of the Heart Valves & regulation of heart pumping, cardiac cycle Rhythmical Excitation of the Hear & Specialized excitatory & conductive system of the heart & its control (revisit) Electrocardiogram, its interpretation & its abnormalities Medical Physics of Pressure, Flow, and Resistance, Vascular Distensibility and Functions of the Arterial and Venous Systems Microcirculation and the Lymphatic System, Local and Humoral Control of Blood Flow by the Tissues Nervous Regulation of the Circulation, and Rapid & Long-Term Control of Arterial Pressure, hypertension Cardiac Output, Venous Return, and Their Regulation Muscle Blood Flow and Cardiac Output During Exercise; the Coronary & regional circulation Cardiac Failure, Circulatory Shock Heart Valves and Heart Sounds; Dynamics of Valvular and Congenital Heart Defects 			
	<ul style="list-style-type: none"> Behavioural Sciences, Bioethics & Professionalism 	<ul style="list-style-type: none"> Breaking the bad news Stigma to mental illness 			
	<ul style="list-style-type: none"> Radiology, Artificial Inteligence & Innovation 	<ul style="list-style-type: none"> Chest radiograph with perspective of cardiovascular system Radiology with perspective of Artificial Intelligence & Innovation. 			
	<ul style="list-style-type: none"> Family Medicine 	<ul style="list-style-type: none"> Approach to a patient with chest pain 			
	<ul style="list-style-type: none"> Research Vertical components 	<ul style="list-style-type: none"> Research Club Activity (Synopsis writing) The Holy Quran Translation Component 			
	<ul style="list-style-type: none"> Vertical Integration 	Clinically content relevant to CVS module <ul style="list-style-type: none"> Risk factors of coronary vascular disease (Community Medicine) Breaking bad news (Behavior Sciences) DME orientation/paper discussion (DME) Thrombosis & Infarction (Pathology) Approach to a patient with chest pain (Family Medicine) Hypertensive retinopathy (Eye) ECG Changes (MI, Electrical Imbalance, Myocardial hypertrophy) (Medicine) Overview of acute coronary syndrome & management of heart failure & management of shock (Medicine) Hypertension (Medicine) Clinical pharmacology of antihypertensive drugs (Pharmacology) Cardiovascular changes in pregnancy (Gynae & Obs) 			

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CVS Module Team

Module Name	:	CVS Module
Duration of module	:	05 Weeks
Coordinator	:	Dr. Aneela Yasmeen
Co-Coordinator	:	Dr. Sheena Tariq
Reviewed by	:	Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Aneela Yasmeen Senior demonstrator physiology
2.	Director DME	Prof. Dr. Rai Muhammad Asghar	2.	Co-coordinator	Dr. Kashif Senior Demonstrator of Biochemistry
3.	Convener Curriculum	Prof. Dr. Naeem Akhter	3.	DME Focal person	Dr. Sidra Hamid Assistant Professor Physiology
4.	Dean basic sciences and Chairperson Anatomy	Prof Dr. Ayesha Yousaf	4.	Co-coordinator	Dr. Ali Raza Demonstrator of Anatomy
5.	Additional Director DME	Prof. Dr. Ifra Saeed	5.	Co-coordinator	Dr. Sheena Tariq APWMO of Physiology
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar	DME Implementation Team		
7.	Chairperson Biochemistry	Dr. Aneela Jamil	1.	Director DME	Dr. Rai Muhammad Asghar
8.	Focal Person Anatomy	Prof Dr. Ayesha Yousaf	2.	Deputy Director DME	Dr. Shazia Zeb
9.	Focal Person Physiology	Dr. Sidra Hamid	3.	Implementation Incharge 1st&2 nd Year MBBS	Prof. Dr. Ifra Saeed
10.	Focal Person Biochemistry	Dr. Aneela Jamil	4.	Module planner & implementation coordinator	Dr. Sidra Hamid
11.	Focal Person Pharmacology	Dr. Zunera Hakim	5.	Editor	Muhammad Arslan Aslam
12.	Focal Person Medicine	Dr Madiha Nazar			
13.	Focal Person Pathology	Dr. Asiya Niazi			
14.	Focal Person Behavioral Sciences	Dr. Saadia Yasir			
15.	Focal Person Community Medicine	Dr. Afifa Kulsoom			
16.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar			

Module V – CVS Module

Rationale: The main role of the cardiovascular system in the body is to transport oxygen to all tissues in the body and for removing, from these same tissues, metabolic waste products. The system itself consists of the blood, the medium for exchanging oxygen, nutrients and waste products throughout the body, the blood vessels, the pipes through which the blood flows and the heart, the pump which forces blood to flow through the blood vessels.

Cardiovascular health is important in maintaining overall health and wellness. This module will teach how heart and cardiovascular system work when healthy, and what happens when diseased. We will explore through lectures, SGDs and skill lab normal anatomy, physiology, biochemistry of CVS. This module will briefly discuss the common CVS diseases & their prevention, therapeutic drug treatment, behavioral aspects, radiological findings.

Module Outcomes

At the end of this module the student should be able to:

Knowledge:

1. Explain the structural & developmental organization of CVS.
2. Explain different waves, segment and intervals of ECG and apply it to the interpretation of ECG.
3. Use technology based medical education including
Artificial Intelligence.
4. Appreciate concepts & importance of
Family Medicine
Biomedical Ethics
Research

Skill:

1. Understand the physiology of conductive system of heart, cardiac cycle.
2. Must understand the pathophysiology of edema, infarction, shock and thrombosis.

Attitude:

- Demonstrate **Professional Attitude, Team-Building Spirit and Good Communication Specially in Small Group Discussions.**

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning

Methodologies/Strategies

- Large Group Interactive Session (LGIS)
- Small Group Discussion (SGD)
- Self-Directed Learning (SDL)
- Case Based Learning (CBL)
- Problem- Based Learning (PBL)
- Skill Labs/Practicals (SKL)

Tables & Figures

- Table1. Domains of learning according to Blooms Taxonomy
- Figure 1. Prof Umar's Model of Integrated Lecture
- Table2. Standardization of teaching content in Small Group Discussions
- Table 3. Steps of taking Small Group Discussions
- Figure 2. PBL 7 Jumps Model

Table1. Domains of Learning According to Blooms Taxonomy

Sr. #	Abbreviation	Domains of learning
1.	C	Cognitive Domain: knowledge and mental skills.
	• C1	Remembering
	• C2	Understanding
	• C3	Applying
	• C4	Analyzing
	• C5	Evaluating
	• C6	Creating
2.	P	Psychomotor Domain: motor skills.
	• P1	Imitation
	• P2	Manipulation
	• P3	Precision
	• P4	Articulation
	• P5	Naturalization
3.	A	Affective Domain: feelings, values, dispositions, attitudes, etc
	• A1	Receive
	• A2	Respond
	• A3	Value
	• A4	Organize
	• A5	Internalize

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

The large group interactive session is structured format of Prof Umar Model of Integrated lecture. It will be followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explain the underlying phenomena through questions, pictures, videos of patients, interviews and exercises, etc. Students are actively involved in the learning process.

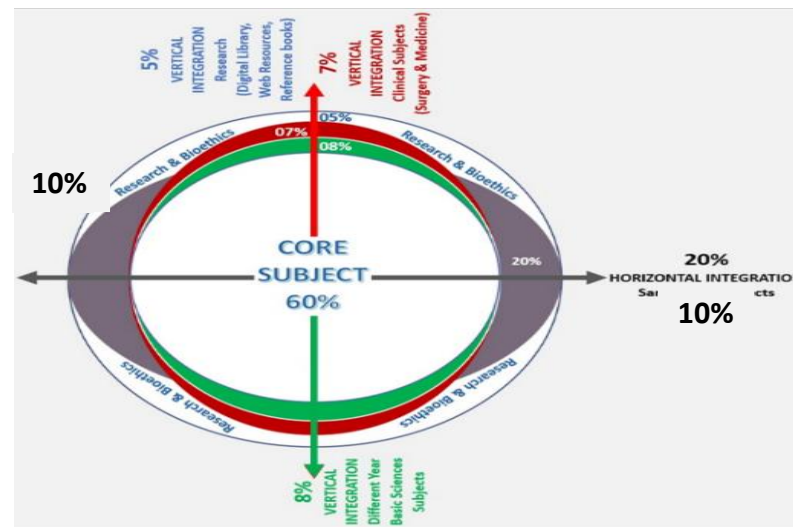


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

This format helps students to clarify concepts acquire skills and attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics or power point presentations. Students exchange opinions and apply knowledge gained from lectures, SGDs and self study. The facilitator role is to ask probing questions, summarize and help to clarify the concepts.

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementaion of Small Group Discussions

Step 1	Sharing of Learning objectives by using students Study guides	First 5 minutes
Step 2	Asking students pre-planned questions from previous teaching session to develop co-relation (these questions will be standardized)	5minutes
Step 3	Students divided into groups of three and allocation of learning objectives	5minutes
Step 4	ACTIVITY: Students will discuss the learning objectives among themselves	15 minutes
Step 5	Each group of students will present its learning objectives	20 min
Step 6	Discussion of learning content in the main group	30min
Step 7	Clarification of concept by the facilitator by asking structured questions from learning content	15 min
Step 8	Questions on core concepts	
Step 9	Questions on horizontal integration	
Step 10	Questions on vertical integration	
Step 11	Questions on related research article	
Step 12	Questions on related ethics content	
Step 13	Students Assessment on online MS teams (5 MCQs)	5 min
Step 14	Summarization of main points by the facilitator	5 min
Step 15	Students feedback on the SGD and entry into log book	5 min
Step 16	Ending remarks	

Self Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be defined
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:
 - i Will be online on LMS (Mid module/ end of Module)
 - ii.OSPE station

Case Based Learning (CBL)

- It's a learner centered model which engages students in discussion of specific scenarios that typically resemble real world examples.
- Case scenario will be given to the students
- Will engage students in discussion of specific scenarios that resemble or typically are real-world examples.
- Learning objectives will be given to the students and will be based on
 - i. To provide students with a relevant opportunity to see theory in practice
 - ii. Require students to analyze data in order to reach a conclusion.
 - iii. Develop analytic, communicative, and collaborative skills along with content knowledge.

Problem Based Learning (PBL)

- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.
- This problem is what drives the motivation and the learning.

The 7- Jump-Format of PBL (Masstricht Medical School)	
Step 7	Synthese & Report
Step 6	Collect Information from outside
Step 5	Generate learning Issues
Step 4	Discuss and Organise Ideas
Step 3	Brainstorming to Identify Explanations
Step 2	Define the Problem
Step 1	Clarify the Terms and Concepts of the Problem Scenario
	Problem- Scenario

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide	10-15 minutes
Practical work	25-30 minutes
Write/ draw and get it checked by teacher	20-25 minutes
05 mcqs at the end of the practical	10 minutes
At the end of module practical copy will be signed by head of department	
At the end of block the practical copy will be signed by	
Head of Department	
Dean	
Medical education department	
QEC	

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- Large Group Interactive Session:
 - Anatomy (LGIS)
 - Physiology (LGIS)
 - Biochemistry (LGIS)
- Small Group Discussions
 - Anatomy (SGD)
 - Physiology (SGD)
 - Biochemistry (SGD)
- Self Directed Topic, Learning Objectives & References
 - Anatomy (SDL)
 - Physiology (SDL)
 - Biochemistry (SDL)
- Skill Laboratory
 - Anatomy
 - Physiology
 - Biochemistry

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
General Anatomy				
General Anatomy of CVS (General Organization)	• Describe general organization of cardiovascular system	C2	LGIS	MCQ SAQ VIVA
	• Describe different types of circulations	C2		
	• Discuss general structural patterns of arteries and veins	C2		
	• Classify capillaries	C1		
	• Explain bio - functional importance and location of continuous, fenestrated and sinusoidal capillaries	C2		
	• Discuss related clinicals	C3		
	• How to access HEC digital library	C3		
• How to read relevant research article	C3			
General Anatomy of CVS (Classification of vessels)	• Classify arteries on the basis of function and size	C1	LGIS	MCQ SAQ VIVA
	• Classify veins on the basis of function and size	C1		
	• Describe differences between arteries and veins	C2		
	• Define anastomosis and discuss different types of arterial and venous anastomosis	C2		
	• Differentiate between anatomic end arteries and functional end arteries giving example	C2		
	• Discuss related clinicals	C3		
	• How to access HEC digital library	C3		
• How to read relevant research article	C3			
Histology				
Histology of CVS (Arteries and Veins)	• Describe general histological structure of arteries and veins	C2	LGIS	MCQ SAQ VIVA
	• Tabulate histological differences between arterioles, medium sized arteries, and large arteries	C2		
	• Discuss related clinicals	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Histology of CVS	• Differentiate between continuous, fenestrated and sinusoidal capillaries	C2	LGIS	MCQ
	• Enlist bio functions of endothelium	C2		

(Capillaries)	• Discuss related clinicals	C2		SAQ VIVA
	• How to access How to access HEC digital library	C3		
	• How to Read How to read relevant research article	C3		
Histology of CVS (Tunics of Heart & Lymphatic System)	• Describe histological details of endocardium, myocardium and epicardium	C3	LGIS	MCQ SAQ VIVA
	• Tabulate differences between blood capillaries and lymphatic capillaries	C2		
	• How to access How to access HEC digital library	C3		
	• How to Read How to read relevant research article	C3		
Embryological Development				
Development of CVS (Development of Veins)	• Recall the process of vasculogenesis	C2	LGIS	MCQ SAQ VIVA
	• Describe venous drainage of embryo	C2		
	• Enlist derivatives of vitelline veins	C1		
	• Discuss role cardinal veins	C2		
	• Describe Development of inferior vena cava	C2		
	• Discuss related Congenital abnormalities	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Development of CVS (Aortic Arches and derivatives)	• Describe development and transformation of aortic arches	C2	LGIS	MCQ SAQ VIVA
	• Enlist derivatives of 1-6th aortic arches	C1		
	• Discuss formation of intersegmental arteries	C2		
	• Describe sources and formation of coronary arteries	C2		
	• Discuss development of aorta Related Congenital abnormalities	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Development of CVS (Formation, Position and Partitioning of heart tube)	• Discuss establishment of cardiogenin field	C2	LGIS	MCQ SAQ VIVA
	• Describe formation and position of heart tube in developing embryo	C2		
	• Discuss formation of cardiac loop	C2		
	• Describe development of sinus venosus	C2		
	• Explain importance of septum spurium	C2		
	• Describe development of cardiac septa	C2		
	• Discuss different methods of septum formation	C2		
	• Explain septum formation in right atrium	C2		
• Describe development and differentiation of atria	C2			

	<ul style="list-style-type: none"> • Discuss related congenital abnormalities 	C3		
	<ul style="list-style-type: none"> • How to access HEC digital library 	C3		
	<ul style="list-style-type: none"> • How to read relevant research article 	C3		
Development of CVS (Formation and partitioning of Ventricles)	<ul style="list-style-type: none"> • Discuss formation of septum in atrioventricular canal 	C2	LGIS	MCQ SAQ VIVA
	<ul style="list-style-type: none"> • Describe formation of atrioventricular valves 	C2		
	<ul style="list-style-type: none"> • Explain septum formation in truncus arteriosus & conus cordis 	C2		
	<ul style="list-style-type: none"> • Describe septum formation in ventricles Discuss formation of semilunar valves 	C2		
	<ul style="list-style-type: none"> • Discuss development of conducting system of heart 	C2		
	<ul style="list-style-type: none"> • Discuss related Congenital abnormalities 	C3		
	<ul style="list-style-type: none"> • How to access HEC digital library 	C3		
Development of CVS (Fetal circulation)	<ul style="list-style-type: none"> • Describe fetal circulation in detail 	C2	LGIS	MCQ SAQ VIVA
	<ul style="list-style-type: none"> • Discuss role of foramen ovale, ductus arteriosus and ductus venosus in fetal circulation and their fate 	C2		
	<ul style="list-style-type: none"> • Differentiate between fetal and postnatal circulation 	C2		
	<ul style="list-style-type: none"> • Discuss related Congenital abnormalities 	C3		
	<ul style="list-style-type: none"> • How to access HEC digital library 	C3		

Physiology Large Group Interactive Session (LGIS)

Topics	Learning Objectives	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Introduction to CVS	1. Describe scheme of circulation through the heart and body	<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Cardiovascular Physiology (Chapter 14, Page 469) • Physiology by Linda S. Costanzo 6th Edition. Cardiovascular Physiology (Chapter 4, Page 117) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 02, (Chapter 05, Page 101) 	<ol style="list-style-type: none"> 1. https://youtu.be/28CYhgjrBLA 2. https://training.seer.cancer.gov/anatomy/cardiovascular/#:~:text=The%20cardiovascular%20system%20is%20sometimes,arteries%2C%20veins%2C%20and%20capillaries. 	1.C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Classification of blood vessels & Biophysical considerations	1.Enumerate Classification of blood vessels. 2.Explain structure and functions of types of blood vessels	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 05, Cardiovascular Physiology (Chapter 31, Page 567,571) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 15, Page 513) • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4, Page 119) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 04 (Chapter 15, Page 183) 	<ol style="list-style-type: none"> 1. https://youtu.be/ar2_UPIGzmU 2. https://training.seer.cancer.gov/anatomy/cardiovascular/blood/classification.html 	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Heart Sounds	Describe four heart sound and differences between 1st and 2nd heart sounds	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 05, Cardiovascular Physiology (Chapter 30, Page 542) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Section 04. (Chapter 23, Page 283) 	<ol style="list-style-type: none"> 1. https://youtu.be/dBwr2GZCmQM 2. https://www.utmb.edu/pedi_ed/CoreV2/Cardiology/cardiolog yV2/cardiologyV23.html 	C1/C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Regulation of blood flow	Define and describe Resistance to Blood flow Describe regulation of Blood pressure and Poiseuilles law Describe factors related with Blood viscosity and its role in regulation	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 05, Cardiovascular Physiology (Chapter 31, Page 575) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 02(Chapter 5, Page 107) (Chapter 6,page 110) 	<ol style="list-style-type: none"> 1. https://youtu.be/cocB-M3h9k0 2. https://journals.physiology.org/doi/full/10.1152/advan.00074.2010 	C1 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

		<ul style="list-style-type: none"> Textbook of Medical Physiology by Guyton & Hall.14th Edition.Section 04. (Chapter 14, Page 173) (Chapter 17, Page 205) 				
Capillary circulation, Concept of vasomotion and starling forces	<p>Explain the details of types of starling forces .</p> <p>Expalin role of starling forces in different pathological conditions</p>	<ul style="list-style-type: none"> Ganong’s Review of Medical Physiology.25TH Edition.Section 05,(Chapter 31, Page 577) Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 170) Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition.Section 02(Chapter 6,Page 119) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 04. (Chapter 16, Page 193) 	<ol style="list-style-type: none"> https://youtu.be/YNROPnYy1tc https://www.osmosis.org/learn/Microcirculation_and_Starling_forces 	C2 C2	LGIS	<p>MCQ</p> <p>SEQ</p> <p>VIVA VOCE</p> <p>MCQ (LMS based Aseessment, MST based Assessment)</p> <p>OSPE</p>
Functions of veins, Venous return and factors affecting venous return	<p>Describe how veins are different from arteries</p> <p>Explain Various factors that affect venous return</p>	<ul style="list-style-type: none"> Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 158) Textbook of Medical Physiology by Guyton & Hall.14th Edition.Section 4. (Chapter 15, Page 188) 	<ol style="list-style-type: none"> https://youtu.be/FKJr5uqPv5s https://www.sciencedirect.com/topics/medicine-and-dentistry/venous-return 	C1 C2	LGIS	<p>MCQ</p> <p>SEQ</p> <p>VIVA VOCE</p> <p>MCQ (LMS based Aseessment, MST based Assessment)</p> <p>OSPE</p>
Introduction to ECG & its clinical importance	<p>Enumerate and describe normal components of ECG</p> <p>Draw normal ECG</p> <p>Describe the method of recording ECG</p> <p>Describe the following. Bipolar limb leads.</p>	<ul style="list-style-type: none"> Ganong’s Review of Medical Physiology.25TH Edition.Section 01,Immunity,Infection and Inflammation(Chapter 29, Page 522) 	<ol style="list-style-type: none"> https://youtu.be/SEFhbK8ZCgk https://my.clevelandclinic.org/health/diagnostics/16953-electrocardiogram-ekg 	C1 C1 C1 C1 C1 C1 C1	LGIS	<p>MCQ</p> <p>SEQ</p> <p>VIVA VOCE</p> <p>MCQ (LMS based Aseessment, MST</p>

	Describe Einthovians law and Enthovian triangle. Describe Chest leads and Augmented unipolar limb leads Describe how to read normal ECG Describe the principles of vectorial analysis of ECG. Describe the vectorial analysis of normal ECG	<ul style="list-style-type: none"> Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 491) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Chapter 09,Page 170) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 11, Page 135) 		C1		based Assessment) OSPE
Cardiac output & its control, measurement of cardiac output, pathologically high and low cardiac output	Explain cardiac output Understand various method to measure cardiac output Explain various factor which help in regulation of heart rate and stroke volume	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05,(Chapter 30, Page 543) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 500-507) Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 149,154-158) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 04. (Chapter 20, Page 245)((Chapter 22, Page 280) 	<ol style="list-style-type: none"> https://youtu.be/WuGMqezV3e https://teachmephysiology.com/cardiovascular-system/cardiac-output/ 	C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Vectorial analysis & arrhythmias I	Describe the principles of vectorial analysis of ECG. Describe the vectorial analysis of normal ECG Define arrhythmia Describe abnormal sinus rhythms	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 29, Page 526) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.(Chapter 09,Page 179,180-189) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. 	<ol style="list-style-type: none"> https://www.brainkart.com/article/Principles-of-Vectorial-Analysis-of-Electrocardiograms_19241/ https://youtu.be/6LrptveKYus https://www.medicalnewstoday.com/articles/8887#definition 	C1 C1 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment)

		(Chapter 12, Page 143)((Chapter 13, Page 157)				OSPE
Cardiac cycle - I, Events of cardiac cycle and its graphical representation	Describe the cardiac cycle in detail Enumerate and explain its events Explain the events of cardiac cycle	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology. 25TH Edition. Section 05, (Chapter 30, Page 537) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14, Page 495-500) Physiology by Linda S. Costanzo 6th Edition. Cardiovascular Physiology (Chapter 4, Page 154) Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 03. (Chapter 9, Page 117) 	<ol style="list-style-type: none"> https://youtu.be/XbivIaFPoQI https://www.sciencedirect.com/science/article/pii/S0010027721003309 https://youtu.be/sLLLOaZ85Lk https://teachmephysiology.com/cardiovascular-system/cardiac-cycle-2/cardiac-cycle/ https://youtu.be/HNkwXZSSsU 	C1 C1, C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Arrhythmias II	Describe abnormal rhythms resulting from the block of heart signals within the intra cardiac conduction pathways Define ectopic beats Explain the following with the help of relevant ECGs. Premature contractions. Paroxysmal tachycardia. Ventricular fibrillation. Atrial fibrillation. Atrial flutter. Cardiac arrest. Describe different degrees of heart block and ECG changes Explain atrial and ventricular flutter and fibrillation	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology. 25TH Edition. Section 05 (Chapter 29, Page 527) Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 09, Page 180-189) Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 03. (Chapter 13, Page 157) 	<ol style="list-style-type: none"> https://youtu.be/6LrptveKYus https://www.medicalnewstoday.com/articles/8887#definition 	C1 C1 C2 C2 C2 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

<p>Cardiac cycle – II, Functions of ventricles as pumps, aortic pressure curve, regulation of heart pumping</p>	<p>Draw various events during cardiac cycle Explain regulation of heart pumping</p>	<ul style="list-style-type: none"> • Ganong’s Review of Medical Physiology.25TH Edition.Section 05,(Chapter 30, Page 537) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 495-500) • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 154) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 9, Page 117-126) 	<ol style="list-style-type: none"> 1. https://youtu.be/dmPtaJxgRQU 2. https://youtu.be/VI9zo_CzQ9g 3. https://youtu.be/pli2zs8Kekw 4. https://youtu.be/kMJ-US6Qfqc 5. https://youtu.be/qhtAhbyBSfs 6. https://teachmephysiology.com/cardiovascular-system/cardiac-cycle-2/cardiac-cycle/ 	<p>C1 C2</p>	<p>LGIS</p>	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE</p>
<p>ECG changes in myocardial hypertrophies, ischemic heart disease</p>	<p>Discuss ECG changes in different diseases</p>	<ul style="list-style-type: none"> • Ganong’s Review of Medical Physiology.25TH Edition.Section 05(Chapter 29, Page 532) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition.(Chapter 12,Page 151) 	<ul style="list-style-type: none"> • https://youtu.be/SEFhbK8ZCgk • https://youtu.be/D0V_aQXtRSw • https://www.msmanuals.com/home/heart-and-blood-vessel-disorders/diagnosis-of-heart-and-blood-vessel-disorders/electrocardiography 	<p>1.C2</p>	<p>LGIS</p>	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE</p>
<p>Short term regulation of blood pressure</p>	<p>Explain short term regulation of blood pressure Explain central nervous system ischemic response & cushing reaction</p>	<ul style="list-style-type: none"> • Ganong’s Review of Medical Physiology.25TH Edition.Section 05(Chapter 32, Page 585,590) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 15,Page 517,528) • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 163) 	<ol style="list-style-type: none"> 1. https://youtu.be/HUf1LtkPj1k 2. https://www.sciencedirect.com/topics/nursing-and-health-professions/blood-pressure-regulation 3. https://www.cliffsnotes.com/study-guides/anatomy-and-physiology/the-cardiovascular- 	<p>C2 C2</p>	<p>LGIS</p>	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE</p>

		<ul style="list-style-type: none"> Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.(Chapter 18,Page 217) 	system/control-of-blood-pressure			
Congestive cardiac failure	<p>Define cardiac failure. Classify cardiac failure</p> <p>Enumerate the causes of cardiac failure and discuss in detail.</p> <p>Discuss and differentiate between compensated heart failure and decompensated heart failure</p> <p>Discuss and differentiate between Low and high output cardiac failure</p> <p>Define Cardiac reserve.</p>	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 30, Page 538) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.(Chapter 22,Page 271) 	<ol style="list-style-type: none"> https://www.webmd.com/heart-disease/guide-heart-failure https://youtu.be/EDCaFKgtXks https://www.healthline.com/health/congestive-heart-failure 	C1/C2 C1 C2 C2 C1	LGIS	<p>MCQ</p> <p>SEQ</p> <p>VIVA VOCE</p> <p>MCQ (LMS based Aseessment, MST based Assessment)</p> <p>OSPE</p>
Long term regulation of blood pressure	<p>Explain the role of kidneys in long term regulation of blood pressure</p>	<ul style="list-style-type: none"> Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 163) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 16,page 282) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 19, Page 229) 	<ol style="list-style-type: none"> https://youtu.be/5S9xEpAdAgA https://jps.biomedcentral.com/articles/10.1007/s12576-012-0192-0 https://onlinelibrary.wiley.com/doi/10.1111/j.1440-1681.2005.04205.x 	C2	LGIS	<p>MCQ</p> <p>SEQ</p> <p>VIVA VOCE</p> <p>MCQ (LMS based Aseessment, MST based Assessment)</p> <p>OSPE</p>
Splanchnic circulation, cutaneous circulation	<p>Describe the Physiologic anatomy of cerebral blood flow</p> <p>Describe the blood flow in normal state and local control of blood flow</p>	<ul style="list-style-type: none"> Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 173) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 7,page 146) 	<ol style="list-style-type: none"> https://youtu.be/hr6oGuW7mVA https://www.sciencedirect.com/topics/medicine-and-dentistry/splanchnic-blood-flow 	C2 C2	LGIS	<p>MCQ</p> <p>SEQ</p> <p>VIVA VOCE</p> <p>MCQ (LMS based Aseessment, MST based Assessment)</p>

			3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2999290/			OSPE
Skeletal muscle blood flow, Cardiovascular changes during exercise	Discuss the blood flow regulation in skeletal muscle at rest and during exercise.	Ganong's Review of Medical Physiology.25 TH Edition.Section 05(Chapter 30, Page 549) Physiology by Linda S. Costanzo 6 th Edition.Cardiovascular Physiology (Chapter 4,Page 178) Physiological Basis of Medical Practice by Best & Taylor's.13 th Edition.(Chapter 07,Page 148) Textbook of Medical Physiology by Guyton & Hall.14 th Edition.. (Chapter 18, Page 226)(Chapter 21,Page 259)	1. https://www.sciencedirect.com/topics/medicine-and-dentistry/muscle-blood-flow 2. https://youtu.be/H6Fd8sfE2eQ	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Fetal circulation & cardiac abnormalities in fetal circulation	Describe the fetal circulation Discuss the pathophysiology of cardiac abnormalities related to it	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 33, Page 614) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 4(Chapter 23,Page 288) 	1. https://youtu.be/rYVGjzbmAtg 2. https://www.sciencedirect.com/science/article/abs/pii/0033062072900151 3. https://myhealth.ucsd.edu/Conditions/Heart/Congenital/90,P01790	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Circulatory Shock	Define shock. Describe the physiologic causes of shock. Enumerate various types of shock. Describe the stages of shock Describe the following types of shock in detail.	<ul style="list-style-type: none"> Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 4(Chapter 24,Page 293) 	1. https://youtu.be/VZtBOaAMG9w 2. https://my.clevelandclinic.org/health/diseases/17837-cardiogenic-shock	1.C1 2.C1 3.C1 4.C1 5.C1 6.C1 7.C1 8.C1 9.C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST

	Describe Circulatory shock and Hypovolemic shock. Describe Neurogenic shock. Describe Septic shock. Describe Anaphylactic shock					based Assessment) OSPE
Coronary circulation, Atherosclerosis & acute coronary occlusion	Understand the physiologic anatomy of coronary blood supply and normal coronary blood flow Discuss the control of coronary blood flow	Ganong's Review of Medical Physiology.25 TH Edition.Section 05(Chapter 33, Page 610) Physiological Basis of Medical Practice by Best & Taylor's.13 th Edition.(Chapter 15,Page 265) Textbook of Medical Physiology by Guyton & Hall.14 th Edition.. (Chapter 21, Page 262)	1. https://www.msmanuals.com/professional/cardiovascular-disorders/coronary-artery-disease/overview-of-coronary-artery-disease 2. https://youtu.be/WKrVxKJVh00 3. https://www.uptodate.com/contents/mechanisms-of-acute-coronary-syndromes-related-to-atherosclerosis	1.C2 2.C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Cardiac cycle, Events of cardiac cycle and its graphical representation, Functions of ventricles as pumps, aortic pressure curve, regulation of heart pumping (SDL)	Describe the cardiac cycle in detail Enumerate and explain its events Explain the events of cardiac cycle	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05,(Chapter 30, Page 537) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 495-500) Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 154) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 9, Page 117) 	1. https://youtu.be/XbivIaFPoQI 2. https://www.sciencedirect.com/science/article/pii/S0010027721003309 3. https://youtu.be/sLLLOaZ85Lk 4. https://teachmephysiology.com/cardiovascular-system/cardiac-cycle-2/cardiac-cycle/ 5. https://youtu.be/HNkwXZSSsU	C1 C1/C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Definition and Biological importance of lipids.	• Define lipids	C1	LGIS	MCQs
	• Classify lipids	C2		SAQs
	• Describe Biomedical significance of lipids	C2		Viva
Fatty acids	• Classify fatty acids	C1	LGIS	MCQs
	• Describe physical and chemical properties of fatty acids	C2		SAQs Viva
Simple lipids	• Elaborate Structure and physical properties of Triglycerides	C2	LGIS	MCQs
	• Discuss Chemical properties of Triglycerides and their clinical significance	C2		SAQs Viva
Compound lipids (Phospholipids, glycolipids, lipoproteins)	• Classify compound lipids	C2	LGIS	MCQs
	• Discuss structure and functions of compound lipids	C2		SAQs
	• Interpret the clinical role of compound lipids	C3		Viva
Derived lipids	• Describe derived lipids	C2	LGIS	MCQs SAQs Viva
Cholesterol	• Describe Structure and physical properties of Cholesterol	C2	LGIS	MCQs
	• Discuss Chemical properties and functions	C2		SAQs
	• Interpret clinical findings of hypercholesterolemia	C3		Viva
Prostaglandins	• Classify Prostaglandins	C2	LGIS	MCQs
	• Describe functions and clinical significance of Prostaglandins.	C2		SAQs
	• Interpret the role of drugs in prostaglandin synthesis	C3		Viva
Carbohydrate Chemistry				
Introduction and classification of carbohydrates	• Classify carbohydrates	C2	LGIS	MCQs
	• Explain different types of carbohydrates and their clinical significance	C2		SAQs Viva
Isomerism, optical activity and mutarotation	• Discuss Different properties of carbohydrates (Isomerism, optical activity and mutarotation)	C2	LGIS	MCQs SAQs Viva
Monosaccharide	• Classify monosaccharide	C2	LGIS	MCQs
	• Describe chemical properties of monosaccharide	C2		SAQs
	• Interpret the clinical role of sorbitol, mannitol and cardiac glycosides	C3		Viva

Disaccharides	<ul style="list-style-type: none"> Describe Structure and functions of Individual sugars 	C2	LGIS	MCQs SAQs Viva
Homopolyssacharides	<ul style="list-style-type: none"> Explain Structure, physical and chemical properties of homopolyssacharide and their biological importance. 	C2	LGIS	MCQs SAQs Viva
Heteropolysaccharides	<ul style="list-style-type: none"> Explain Structure, physical and chemical properties of heteropolysaccharides and their biological importance. Apply the role of heteropolysaccharides in clinical cases 	C2 C3	LGIS	MCQs SAQs Viva

Anatomy Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Thoracic Wall / Thoracic Vertebra	• Define thorax	C1	SGD, Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss components and shape of thoracic cavity.	C2		
	• Discuss the applied and the related clinical anatomy	C2		
	• Classify Ribs	C1		
	• Describe ribs (side determination, features, attachments, relations, types and ossification.	C2		
	• Discuss the applied and the related clinical anatomy	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Mediastinum	• Discuss the boundaries and division of mediastinum	C2	SGD Skills lab	MCQ SAQ VIVA OSPE
	• Enumerate the contents of anterior mediastinum.	C1		
	• Discuss related clinicals	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Pericardium	• Describe the gross features of fibrous pericardium with its blood and nerve supply	C2	SGD Skills lab	MCQ SAQ VIVA OSPE
	• Describe the gross features of serous pericardium with its blood and nerve supply	C2		
	• Describe transverse and oblique pericardial sinus	C2		
	• Describe the Clinical Significance of the Transverse Pericardial Sinus	C3		
	• Define Pericarditis and Pericardial Effusion	C1		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Heart (External features)	• Demonstrate Position and orientation of heart.	P	SGD, Skills lab	MCQ SAQ VIVA OSPE
	• Describe borders and surfaces of the heart.	C2		
	• Demonstrate the external features of the heart	C2		
	• Discuss related clinicals	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
	• Differentiate between muscular and smooth part.	C2		

Heart (Internal features)	• Identify the various openings, important features in inter-atrial septum.	C2	SGD, Skills lab	MCQ SAQ VIVA OSPE
	• Identify S.A node	C2		
	• Discuss internal features of left atrium, inter atrial septum, mitral valve and pulmonary veins.	C1		
	• Discuss importance of modulator band.	C2		
	• Identify mitral valve, interventricular septum, aortic vestibule, aortic valve.	C3		
	• Discuss related clinicals	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Heart (Clinical Correlations)	•	C1	SGD, Skills lab	MCQ SAQ VIVA OSPE
	•			
	•			
	• How to access HEC digital library			
	• How to read relevant research article	C3		
Vasculature of heart	• Describe the origin of coronary arteries	C2	SGD, Skills lab	MCQ SAQ VIVA OSPE
	• Identify course branches and distribution of right coronary arteries and left coronary artery,	C2		
	• Discuss the concept of right and left dominance.	C2		
	• Describe the venous drainage of heart.	C2		
	• Discuss the related applied and clinical anatomy	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Innervation of Heart	• Describe the formation of superficial and deep cardiac plexus.	C2	SGD, Skills lab	MCQ SAQ VIVA OSPE
	• Discuss related clinicals	C3		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Superior mediastinum (Trachea, Esophagus, Ascending Aorta)	• Enumerate the structure of superior mediastinum	C1	SGD Skills lab	MCQ SAQ VIVA OSPE
	• Describe great vessels in superior mediastinum	C2		
	• How to access HEC digital library	C3		
	• Discuss related clinicals	C3		

	• How to read relevant research article	C3		
Posterior mediastinum (Boundaries and Structures)	• Identify structures in posterior mediastinum	C2	SGD, Skills lab	MCQ SAQ VIVA OSPE
	• Describe anatomy of structure in Posterior mediastinum	C1		
	• Identify course, relations and branches of descending aorta.	C2		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Posterior mediastinum (Azygos system)	• Describe formation, course and clinical importance of azygos system of veins	C3	SGD, Skills lab	MCQ SAQ VIVA OSPE
	• Describe formation and importance of hemiazygos vein	C1		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Surface anatomy / Radiology	• Demonstrate surface projection and radiological aspects of heart, great vessels, trachea, oesophagus, position of heart valves	P	SGD, Skills lab	MCQ SAQ VIVA OSPE
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		

Physiology Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Discussion regarding previous module	• Difficulties regarding questions, MCQs	C1	SGD	MCQs SEQS, Viva OSPE
	• MCQ paper discussion	C2		
Excitation contraction coupling Cardiac action potential	• Describe the mechanism of production of action potential and its propagation in cardiac muscle	C1	SGD	MCQs SEQS Viva OSPE
Cardiac cycle	• Explain events of cardiac cycle	C1	SGD	MCQs SEQS, Viva OSPE
	• Draw various events during cardiac cycle	C1		
ECG	• Define arrhythmia	C1	SGD	MCQs

	<ul style="list-style-type: none"> Describe abnormal rhythm 	C1		SEQS Viva OSPE
Venous return	<ul style="list-style-type: none"> Describe how veins are different from arteries 	C1	SGD	MCQs SEQS Viva OSPE
	<ul style="list-style-type: none"> Various factors affecting venous return 	C1		
Long term regulation of blood pressure	<ul style="list-style-type: none"> Explain the role of kidney in long term regulation 	C1	SGD	MCQs SEQS Viva OSPE
CCF HTN	<ul style="list-style-type: none"> Describe cardiac failure 	C1	SGD	MCQs SEQS Viva OSPE
	<ul style="list-style-type: none"> Classify cardiac failure 	C2		
	<ul style="list-style-type: none"> HTN 	C2		

Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Introduction of lipids and carbohydrates	<ul style="list-style-type: none"> Classify lipids and carbohydrates 	C1	SGD	MCQs, SAQs Viva
	<ul style="list-style-type: none"> Discuss importance of lipids and carbohydrates 	C2		
Fatty acids	<ul style="list-style-type: none"> Classify fatty acids 	C1	SGD	MCQs SAQs Viva
	<ul style="list-style-type: none"> Describe physical and chemical properties of fatty acids 	C2		
Cholesterol	<ul style="list-style-type: none"> Describe Structure and physical properties of Cholesterol 	C2	SGD	MCQs SAQs Viva
	<ul style="list-style-type: none"> Discuss Chemical properties and functions 	C2		
	<ul style="list-style-type: none"> Interpret clinical findings of hypercholesterolemia 	C3		
Heteropolysaccharides	<ul style="list-style-type: none"> Explain Structure, physical and chemical properties of heteropolysaccharides and their biological importance. 	C2	SGD	MCQs SAQs Viva
	<ul style="list-style-type: none"> Apply the role of heteropolysaccharides in clinical cases 	C3		

Anatomy Self Directed Learning (SDL)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Resources
Thoracic Wall / Thoracic Vertebra	• Define thorax	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, Pg no.73,77, 78-79, 84,89,93,95,98,446,454 https://youtu.be/PoA-Uq9w-7s https://youtu.be/Ok8-nwVLysM https://www.sciencedirect.com/science/article/pii/S0161475415000639
	• Discuss components and shape of thoracic cavity.	
	• Discuss the applied and the related clinical anatomy	
	• Classify Ribs	
	• Describe ribs (side determination, features, attachments, relations, types and ossification.	
	• Discuss the applied and the related clinical anatomy	
	• How to access HEC digital library	
	• How to read relevant research article	
Mediastinum	• Discuss the boundaries and division of mediastinum	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no.107,110,118,127,128,132-133,160-168,171 https://youtu.be/oBR9p_UDTuo https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5111324/
	• Enumerate the contents of anterior mediastinum.	
	• How to access HEC digital library	
	• How to read relevant research article	
Pericardium	• Describe the gross features of fibrous pericardium with its blood and nerve supply	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no.111,128-129,133-134 https://youtu.be/5RMeCgJn730 https://www.sciencedirect.com/science/article/abs/pii/S1054880721000302
	• Describe the gross features of serous pericardium with its blood and nerve supply	
	• Describe transverse and oblique pericardial sinus	
	• Describe the Clinical Significance of the Transverse Pericardial Sinus	
	• Define Pericarditis and Pericardial Effusion	
	• How to access HEC digital library	
	• How to read relevant research article	
	• Demonstrate Position and orientation of heart.		• ClinicallyOriented Anatomy 6th Edition, P no.129,135-137,144-149,153-159,171-172
• Describe borders and surfaces of the heart.		
• Demonstrate the external features of the heart		
• How to access HEC digital library		

	<ul style="list-style-type: none"> • How to read relevant research article 	https://youtu.be/uhSBFOTwzDQ https://www.ahajournals.org/doi/full/10.1161/JAHA.122.028014
Heart II Internal features	<ul style="list-style-type: none"> • Differentiate between muscular and smooth part. 	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no.129,135-137,144-149,153-159,171-172 https://youtu.be/uhSBFOTwzDQ https://www.ahajournals.org/doi/full/10.1161/JAHA.122.028014
	<ul style="list-style-type: none"> • Identify the various openings, important features in inter-atrial septum. 	
	<ul style="list-style-type: none"> • Identify S.A node 	
	<ul style="list-style-type: none"> • How to access HEC digital library 	
	<ul style="list-style-type: none"> • How to read relevant research article 	
Heart III Clinical Co-Relation	<ul style="list-style-type: none"> • Discuss internal features of left atrium, inter atrial septum, mitral valve and pulmonary veins. 	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no.129,135-137,144-149,153-159,171-172 https://youtu.be/uhSBFOTwzDQ https://www.ahajournals.org/doi/full/10.1161/JAHA.122.028014
	<ul style="list-style-type: none"> • Discuss importance of modulator band. 	
	<ul style="list-style-type: none"> • Identify mitral valve, interventricular septum, aortic vestibule, aortic valve. 	
	<ul style="list-style-type: none"> • How to access HEC digital library 	
	<ul style="list-style-type: none"> • How to read relevant research article 	
Vasculature of heart	<ul style="list-style-type: none"> • Describe the origin of coronary arteries 	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no.129,135-137,144-149,153-159,171-172 https://youtu.be/uhSBFOTwzDQ https://www.ahajournals.org/doi/full/10.1161/JAHA.122.028475
	<ul style="list-style-type: none"> • Identify course branches and distribution of right coronary arteries and left coronary artery, 	
	<ul style="list-style-type: none"> • Discuss the concept of right and left dominance. 	
	<ul style="list-style-type: none"> • Describe the venous drainage of heart. 	
	<ul style="list-style-type: none"> • Discuss the related applied and clinical anatomy 	
	<ul style="list-style-type: none"> • How to access HEC digital library 	
	<ul style="list-style-type: none"> • How to read relevant research article 	
Innervation of Heart	<ul style="list-style-type: none"> • Describe the formation of superficial and deep cardiac plexus. 	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no.129,135-137,144-149,153-159,171-172 https://youtu.be/uhSBFOTwzDQ https://www.ahajournals.org/doi/full/10.1161/JAHA.122.028932
	<ul style="list-style-type: none"> • How to access HEC digital library 	
	<ul style="list-style-type: none"> • How to read relevant research article 	

Superior mediastinum (Trachea, Esophagus, Ascending Aorta)	• Enumerate the structure of superior mediastinum	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no.127-128,132,160-166,179 https://youtu.be/2POIIBe2xR4 https://www.sciencedirect.com/science/article/abs/pii/S1472029906000336
	• Describe great vessels in superior mediastinum	
	• How to access HEC digital library	
	• How to read relevant research article	
Posterior mediastinum I	• Identify structures in posterior mediastinum	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no. 128, 168-172, 179 https://youtu.be/2POIIBe2xR4 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9792830/
	• Describe anatomy of structure in Posterior mediastinum	
	• Identify course, relations and branches of descending aorta.	
	• How to access HEC digital library	
	• How to read relevant research article	
Posterior mediastinum II	• Describe formation, course and clinical importance of azygos system of veins	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no. 128, 168-172, 179 https://youtu.be/2POIIBe2xR4 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9792830/
	• Describe formation and importance of hemiazygos vein	
	• How to access HEC digital library	
	• How to read relevant research article	
Surface anatomy / Radiology	• Demonstrate surface projection and radiological aspects of heart, great vessels, trachea, oesphagus, position of heart valves	<ul style="list-style-type: none"> • ClinicallyOriented Anatomy 6th Edition, P no.129,135-137,144-149,153-159,171-172 https://youtu.be/wqiK-8nZEgk https://pubs.rsna.org/doi/10.1148/ryct.220047
	• How to access HEC digital library	
	• How to read relevant research article	

Physiology Self Directed Learning (SDL)

Topics Of SDL	Learning Objective	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
ON CAMPUS: Heart Sounds	1. Describe four heart sound and differences between 1st and 2nd heart sounds	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 05, Cardiovascular Physiology (Chapter 30, Page 542) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition.Section 04. (Chapter 23, Page 283) 	<ol style="list-style-type: none"> 1. https://youtu.be/dBwr2GZCmQM 2. https://www.utmb.edu/pediatrics/CoreV2/Cardiology/cardiologyV2/cardiologyV23.html 	C1/C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation
Capillary circulation, Concept of vasomotion and starling forces	<ol style="list-style-type: none"> 1. Explain the details of types of starling forces. 2. Expalin role of starling forces in different pathological conditions 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 05,(Chapter 31, Page 577) • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 170) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 02(Chapter 6,Page 119) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 04. (Chapter 16, Page 193) 	<ol style="list-style-type: none"> 1. https://youtu.be/YNROPnYy1tc 2. https://www.osmosis.org/learn/Microcirculation_and_Starling_forces 	1.C2 2.C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation
Introduction to ECG & its clinical importance	<ul style="list-style-type: none"> • Enumerate and describe normal components of ECG • Draw normal ECG • Describe the method of recording ECG 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 01,Immunity,Infection and Inflammation(Chapter 29, Page 522) 	<ol style="list-style-type: none"> 1. https://youtu.be/SEFhbK8ZCgk 2. https://my.clevelandclinic.org/health/diagnostics/16953-electrocardiogram-ekg 	C1 C1 C1 C1 C1	SDL	MCQ SEQ VIVA VOCE

	<ul style="list-style-type: none"> Describe the following. Bipolar limb leads. Describe Einthovians law and Enthovian triangle. Describe Chest leads and Augmented unipolar limb leads Describe how to read normal ECG Describe the principles of vectorial analysis of ECG. Describe the vectorial analysis of normal ECG 	<ul style="list-style-type: none"> Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 491) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Chapter 09,Page 170) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 11, Page 135) 		<p>C1 C1 C1 C1</p> <p>C1 C1 C1 C1 C1</p>		<p>MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation</p>
Cardiac cycle - I, Events of cardiac cycle and its graphical representation	<ul style="list-style-type: none"> Describe the cardiac cycle in detail Enumerate and explain its events Explain the events of cardiac cycle 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05,(Chapter 30, Page 537) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 495-500) Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 154) <p>Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 9, Page 117)</p>	<p>1.https://youtu.be/XbivIaF PoQI</p> <p>1. https://www.sciencedirect.com/science/article/pii/S0010027721003309</p> <p>2. https://youtu.be/sLLLOaZ85Lk</p> <p>3. https://teachmephysiology.com/cardiovascular-system/cardiac-cycle-2/cardiac-cycle/</p> <p>4. https://youtu.be/HNkwXZS SssU</p>	<p>1. C1 2. C1/C2 3. C2</p>	SDL	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation</p>
Arrhythmias	<ul style="list-style-type: none"> Describe the principles of vectorial analysis of ECG. Describe the vectorial analysis of normal ECG Define arrhythmia Describe abnormal sinus rhythms 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 29, Page 526) Physiological Basis of Medical Practice by Best & Taylor's.13th 	<p>1.https://www.brainkart.com/article/Principles-of-Vectorial-Analysis-of-Electrocardiograms_19241/</p> <p>2.https://youtu.be/6Lrptve KYus</p>	<p>1. C1 2. C1 3. C1 4. C1</p>	SDL	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE</p>

		Edition.(Chapter 09,Page 179,180-189) Textbook of Medical Physiology by Guyton & Hall.14 th Edition. Section 03. (Chapter 12, Page 143)((Chapter 13, Page 157)	4. https://www.medicalnewstoday.com/articles/8887#definition			SDL Evaluation
Congestive cardiac failure	<p>Explain the characteristics and functions of monocytes.</p> <ul style="list-style-type: none"> • Explain monocyte-macrophge system; importance 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 01,Immunity,Infection and Inflammation(Chapter 03, Page 67) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 03, Blood(Chapter 21,Page 371)(Chapter 22,Page 387) <p>Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452)</p>	<p>1. https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system</p> <p>2.https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4</p>	1.C2 2.C2	SDL	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation</p>
Long term regulation of blood pressure	1. Explain the role of kidneys in long term regulation of blood pressure	<ul style="list-style-type: none"> • Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 163) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 16,page 282) <p>Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 19, Page 229)</p>	<p>1. https://youtu.be/5S9xEpAdAgA</p> <p>2. https://jps.biomedcentral.com/articles/10.1007/s12576-012-0192-0</p> <p>3. https://onlinelibrary.wiley.com/doi/10.1111/j.1440-1681.2005.04205.x</p>	C2	SDL	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation</p>
Skeletal muscle blood flow,	1. Discuss the blood flow regulation in skeletal	Ganong's Review of Medical Physiology.25 TH Edition.Section 05(Chapter 30, Page 549)	1. https://www.sciencedirect.com/topics/medicine-and-	C2	SDL	<p>MCQ SEQ</p>

Cardiovascular changes during exercise	muscle at rest and during exercise.	Physiology by Linda S. Costanzo 6 th Edition. Cardiovascular Physiology (Chapter 4, Page 178) Physiological Basis of Medical Practice by Best & Taylor's. 13 th Edition. (Chapter 07, Page 148) Textbook of Medical Physiology by Guyton & Hall. 14 th Edition. (Chapter 18, Page 226) (Chapter 21, Page 259)	1. dentistry/muscle-blood-flow 2. https://youtu.be/H6Fd8sfE2eQ			VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation
(OFF CAMPUS): Introduction to CVS	<ul style="list-style-type: none"> 1. Describe scheme of circulation through the heart and body 	<ul style="list-style-type: none"> Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Cardiovascular Physiology (Chapter 14, Page 469) Physiology by Linda S. Costanzo 6th Edition. Cardiovascular Physiology (Chapter 4, Page 117) Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 02, (Chapter 05, Page 101) 	<ol style="list-style-type: none"> https://youtu.be/28CYhgjrBLA https://training.seer.cancer.gov/anatomy/cardiovascular/#:~:text=The%20cardiovascular%20system%20is%20sometimes,arteries%2C%20veins%2C%20and%20capillaries. 	1.C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation
Classification of blood vessels & Biophysical considerations	<ol style="list-style-type: none"> 1. Enumerate Classification of blood vessels. 2. Explain structure and functions of types of blood vessels <ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology. 25TH Edition. Section 05, Cardiovascular Physiology (Chapter 31, Page 567, 571) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 15, Page 513) Physiology by Linda S. Costanzo 6th Edition. Cardiovascular Physiology (Chapter 4, Page 119) 	<ol style="list-style-type: none"> https://youtu.be/ar2_UPIGzmU https://training.seer.cancer.gov/anatomy/cardiovascular/blood/classification.html 	1.C1 2. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation

		<ul style="list-style-type: none"> Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 04 (Chapter 15,Page 183) 				
Regulation of blood flow	<p>1.Define and describe Resistance to Blood flow</p> <p>3. Describe regulation of Blood pressure and Poiseuilles law</p> <ul style="list-style-type: none"> Describe factors related with Blood viscosity and its role in regulation 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05,Cardiovascular Physiology (Chapter 31, Page 575) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 02(Chapter 5,Page 107)(Chapter 6,page 110) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 04. (Chapter 14, Page 173) (Chapter 17, Page 205) 	<ol style="list-style-type: none"> https://youtu.be/cocB-M3h9k0 https://journals.physiology.org/doi/full/10.1152/advan.00074.2010 	1.C1 2.C1 3.C1	SDL	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation</p>
Introduction to ECG & its clinical importance	<ul style="list-style-type: none"> Enumerate and describe normal components of ECG Draw normal ECG Describe the method of recording ECG Describe the following. Bipolar limb leads. Describe Einthovians law and Enthovian triangle. Describe Chest leads and Augmented unipolar limb leads Describe how to read normal ECG Describe the principles of vectorial analysis of ECG. 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 01,Immunity,Infection and Inflamma tion(Chapter 29, Page 522) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 491) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Chapter 09,Page 170) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 11, Page 135) 	<ol style="list-style-type: none"> https://youtu.be/SEFhbK8ZCgk https://my.clevelandclinic.org/health/diagnostics/16953-electrocardiogram-ekg 	C1 C1 C1 C1 C1	SDL	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation</p>

	<ul style="list-style-type: none"> Describe the vectorial analysis of normal ECG 					
Vectorial analysis & arrhythmias	<ul style="list-style-type: none"> Describe the principles of vectorial analysis of ECG. Describe the vectorial analysis of normal ECG Define arrhythmia Describe abnormal sinus rhythms 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 29, Page 526) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.(Chapter 09,Page 179,180-189) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 12, Page 143)((Chapter 13, Page 157) 	<ol style="list-style-type: none"> https://www.brainkart.com/article/Principles-of-Vectorial-Analysis-of-Electrocardiograms_19241/ https://www.medicalnewstoday.com/articles/8887#definition https://youtu.be/6LrptveKYus 	C1 C1 C1 C1	SDL	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation</p>
Ca cycle	<ul style="list-style-type: none"> Describe the cardiac cycle in detail Enumerate and explain its events Explain the events of cardiac cycle 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05,(Chapter 30, Page 537) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 14,Page 495-500) Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 154) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 03. (Chapter 9, Page 117) 	<ol style="list-style-type: none"> https://youtu.be/XbivIaFPoQI https://www.sciencedirect.com/science/article/pii/S0010027721003309 https://youtu.be/sLLLOaZ85Lk https://teachmephysiology.com/cardiovascular-system/cardiac-cycle-2/cardiac-cycle/ https://youtu.be/HNkwXZS5ssU 	C1 C1/C2 C2	SDL	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation</p>
Splanchnic circulation, cutaneous circulation	<ul style="list-style-type: none"> Describe the Physiologic anatomy of cerebral blood flow Describe the blood flow in normal state and local control of blood flow 	<ul style="list-style-type: none"> Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 173) 	<ol style="list-style-type: none"> https://youtu.be/hr6oGuW7mVA https://www.sciencedirect.com/topics/medicine-and- 	1.C2 2. C2	SDL	<p>MCQ SEQ VIVA VOCE</p>

		<ul style="list-style-type: none"> Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 7,page 146) 	dentistry/splanchnic-blood-flow 3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2999290/			MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Regulation of blood pressure	1. Explain short term regulation of blood pressure <ul style="list-style-type: none"> Explain central nervous system ischemic response & cushing reaction 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 05(Chapter 32, Page 585,590) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 15,Page 517,528) Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 4,Page 163) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.(Chapter 18,Page 217) 	1. https://youtu.be/HUf1LtkPj1k 2. https://www.sciencedirect.com/topics/nursing-and-health-professions/blood-pressure-regulation 3. https://www.cliffsnotes.com/study-guides/anatomy-and-physiology/the-cardiovascular-system/control-of-blood-pressure	1.C2 2. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation

Biochemistry Self Directed Learning (SDL)

Topic	Learning Objectives At the end of lecture students should be able to	References
Protein chemistry		
Classifications and functions of carbohydrates	<ul style="list-style-type: none"> • Classify carbohydrates • Explain different types of carbohydrates and their clinical significance 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No.7 pg 92,93 • Text Book of Harper 32 S T Edition chap No. 15 pg 141, 142 ,144 ,147
Classifications and functions of lipids	<ul style="list-style-type: none"> • Define lipids • Classify lipids • Describe Biomedical significance of lipids 	<ul style="list-style-type: none"> • Textbook of Harper 32 S T Edition Chapter No.21 pg 196
Fatty acids and simple lipids	<ul style="list-style-type: none"> • Classify fatty acids • Describe physical and chemical properties of fatty acids • Elaborate Structure and physical properties of Triglycerides • Discuss Chemical properties of Triglycerides and their clinical significance 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No.15 pg 196 -199
Classification and Chemical reactions of monosaccharide	<ul style="list-style-type: none"> • Classify monosaccharide • Describe chemical properties of monosaccharide • Interpret the clinical role of sorbitol, mannitol and cardiac glycosides 	<ul style="list-style-type: none"> • Text Book of Harper 32 S T Edition chap No.15 pg 142, 145
Disaccharides	<ul style="list-style-type: none"> • Describe Structure and functions of Individual sugars 	<ul style="list-style-type: none"> • Text book of Harper 32 S T Edition Chap No.15 pg 145, 156
Compound lipids	<ul style="list-style-type: none"> • Classify compound lipids • Discuss structure and functions of compound lipids • Interpret the clinical role of compound lipids 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No. 21 pg 199-202
Prostaglandins	<ul style="list-style-type: none"> • Classify Prostaglandins • Describe functions and clinical significance of Prostaglandins. • Interpret the role of drugs in prostaglandin synthesis 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No. 17 pg 236 • Text Book of Lehninger 7th Edition chap No. 10.3 pg 375,376
Heteropolysaccharides	<ul style="list-style-type: none"> • Explain Structure, physical and chemical properties of heteropolysaccharides and their biological importance. • Apply the role of heteropolysaccharides in clinical cases 	<ul style="list-style-type: none"> • Textbook of Lippincott 8th Edition Chapter No. 14 pg 173-175 • Text Book of Harper 32 S T Edition Chap No.15 pg 147 ,148

Histology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Elastic Arteries	• identify characteristic histological features of tunica intima, tunica media and tunica adventitia of elastic arteries under microscope	P1	Skill lab	OSPE
	• Illustrate histological structure of elastic artery	C1		
	• Write two points of identification	C1		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Muscular Arteries Small Arteries	• identify characteristic histological features of tunica intima, tunica media and tunica adventitia of muscular and small sized arteries under microscope	P1	Skill lab	OSPE
	• Illustrate histological structure of Muscular and small sized artery	C1		
	• Write two points of identification	C1		
	• Differentiate between three types of arteries on histology slides	C1		
	• How to access HEC digital library	C3		
Large Vein	• Identify characteristic histological features of tunica intima, tunica media and tunica adventitia of large vein under microscope	P1	Skill lab	OSPE
	• Illustrate histological structure of large vein	C1		
	• Write two points of identification	C1		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Medium and small sized vein	• Identify characteristic histological features of tunica intima, tunica media and tunica adventitia of medium and small sized vein under microscope	P1	Skill lab	OSPE
	• Illustrate histological structure of medium and small sized vein	C1		
	• Write two points of identification Differentiate between three types of veins on histology slides	C1		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		
Capillaries	• Classify capillaries on the basis of histological structure and function	C1	Skill lab	OSPE
	• Enlist sites of continuous, fenestrated and sinusoidal capillaries	C1		

	• Elaborate characteristic histological features of tunica intima, tunica media and tunica adventitia of capillaries	C1		
	• Draw and label histological structure of each type of capillaries	C1		
	• Write two points of identification	C1		
	• How to access HEC digital library	C3		
	• How to read relevant research article	C3		

Physiology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Blood Pressure at rest and during exercise	• Define B. P	P	Skill Lab	OSPE Viva
	• Detail study of apparatus	P		
	• How to use apparatus	P		
	• Identify changes in blood pressure during exercise	P		
Examination of arterial pulse and JVP	• Importance of radial pulse & JVP	P	Skill Lab	OSPE Viva
	• Procedure	P		
	• Various characteristic of pulse	P		
Examination of arterial pulse and JVP	• Importance of radial pulse & JVP	P	Skill Lab	OSPE Viva
	• Procedure	P		
	• Various characteristic of pulse	P		
ECG	• Detail study of ECG leads	P	Skill Lab	OSPE Viva
	• How to apply leads	P		
	• Recording	P		
	• Discussion about normal ECG	P		
	• Clinical importance	P		
Clinical examination of chest (Heart sounds)	• Inspection	P	Skill Lab	OSPE Viva
	• Palpation	P		
	• Auscultation of all areas of heart	P		
	• Locate apex beat	P		

Biochemistry Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Lipids	<ul style="list-style-type: none"> Describe Physical and chemical properties of lipids (solubility, saponification, Emulsification and Acrolein test) 	P	Skill lab	OSPE
Carbohydrates	<ul style="list-style-type: none"> Perform Tests for the detection of carbohydrates and reducing sugars (Molisch's and Benedict's tests) 	P	Skill lab	OSPE
Carbohydrates	Perform Tests for differentiation between Mono and disaccharides; Aldo and keto sugars (Barford's and Salvinoff's test)	P	Skill lab	OSPE
Carbohydrates	<ul style="list-style-type: none"> Perform Iodine test 	P	Skill lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**
- **Longitudinal Themes**
 - **Biomedical Ethics & Professionalism**
 - **Family Medicine**
 - **Artificial Intelligence (Innovation)**
 - **Integrated Undergraduate Research Curriculum (IUGRC)**

Basic and Clinical Sciences (Vertical Integration)

Case Based Learning (CBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
Anatomy	• Cardiac Temponade	Apply basic knowledge of subject to study clinical case.	C3
	• Coarctation of Aorta	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Pitting edema	Apply basic knowledge of subject to study clinical case.	C3
	• Palpitations / Tachycardia	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Atherosclerosis	Apply basic knowledge of subject to study clinical case.	C3
	• Heparin/dextran	Apply basic knowledge of subject to study clinical case.	C3

Large Group Interactive Sessions (LGIS)

Pathology

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Edema	• Define edema	C1	LGIS	MCQ
	• Classify edema	C2		
	• Discuss pathophysiology of edema with clinical correlation	C2		
Thrombosis	• Define embolus	C1	LGIS	MCQ
	• Describe different types of emboli with clinical context <ul style="list-style-type: none"> ○ Thrombotic ○ Fat and marrow ○ Cholesterol ○ Air ○ Fat 	C1		
	• Differentiate between pulmonary and systemic thrombo-embolism with clinical relevance	C2		
	• Describe the Patho-genetic mechanism of infarction	C1		

Infarction	<ul style="list-style-type: none"> Describe commonly occurring infarcts in different clinical settings 	C1	LGIS	MCQ
Shock	<ul style="list-style-type: none"> Define shock 	C1	LGIS	MCQ
	<ul style="list-style-type: none"> Enumerate Types with clinical examples 	C1		
	<ul style="list-style-type: none"> Describe pathogenesis of shock 	C1		
	<ul style="list-style-type: none"> Describe stages of shock with clinical examples 	C1		

Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Ecg changes	<ul style="list-style-type: none"> Discuss normal ECG and its various components. 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> Explain important ECGs seen in emergency department. 	C2		
Hypertension	<ul style="list-style-type: none"> Define Hypertension 	C1	LGIS	MCQs
	<ul style="list-style-type: none"> Discuss various causes and grades. 	C2		
	<ul style="list-style-type: none"> Explain the clinical presentation. 	C2		
	<ul style="list-style-type: none"> Compare between primary and secondary hypertension. 	C2		
	<ul style="list-style-type: none"> Enlist the lab investigations to be done for hypertension. 	C2		
	<ul style="list-style-type: none"> Discuss the treatment plan of hypertension. 	C2		
Overview of acute coronary syndrome	<ul style="list-style-type: none"> Discuss ACS and its various causes. 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> Illustrate the clinical presentation of ACS. 	C2		
	<ul style="list-style-type: none"> Explain the workshop to be done in E.R for ACS 	C2		
	<ul style="list-style-type: none"> Discuss the treatment of ACS 	C2		
Management of heart failure	<ul style="list-style-type: none"> Discuss the stepwise management of heart failure. 	C2	LGIS	MCQs
Management of shock	<ul style="list-style-type: none"> Discuss the management according to various types of shock. 	C2	LGIS	MCQs

Surgery

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Congenital cardiac anomalies	<ul style="list-style-type: none"> • Describe: • Various cardiac deformities • & congenital malformations 	C1	LGIS, CBL	MCQs
	<ul style="list-style-type: none"> • Significance of deformities • General and operative management outline 	C1		
Introduction to Cardiac Surgery	<ul style="list-style-type: none"> • To outline basics of Cardiac surgery 	C1	LGIS	MCQs
	<ul style="list-style-type: none"> • Differentiate from other subspecialties 	C2		
	<ul style="list-style-type: none"> • Basic cardiac patient management 	C2		
Ectopia Cordis & Dextrocardia	<ul style="list-style-type: none"> • Describe: • Various cardiac abnormalities with significance 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> • General and operative management outline 	C2		
Congenital cardiac anomalies	<ul style="list-style-type: none"> • Describe: • Various cardiac deformities • & congenital malformations 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> • Significance of deformities • General and operative management outline 	C2		
Introduction to Cardiac Surgery	<ul style="list-style-type: none"> • To outline basics of Cardiac surgery 	C1	LGIS	MCQs
	<ul style="list-style-type: none"> • Differentiate from other subspecialties 	C2		
	<ul style="list-style-type: none"> • Basic cardiac patient management 	C2		

Obstetrics & Gynaecology

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Cardiovascular changes in pregnancy, common cardiac diseases	<ul style="list-style-type: none"> • Understand physiological changes in cardiovascular system during pregnancy (incl. plasma volume, stroke volume, cardiac output, blood pressure) 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> • Know physiological versus pathological symptoms related to CVS 	C2		
	<ul style="list-style-type: none"> • Briefly describe clinical presentations of common cardiac diseases during pregnancy (rheumatic heart disease, cardiomyopathy, cardiac failure) 	C2		
	<ul style="list-style-type: none"> • The effect of cardiac disease on fetus and the mother 	C2		
Hypertensive disorders in pregnancy (gestational hypertension, pre-eclampsia)	<ul style="list-style-type: none"> • Define gestational hypertension 	C1	LGIS	MCQs
	<ul style="list-style-type: none"> • Describe the spectrum of hypertensive disorders during pregnancy with proper definitions 	C2		
	<ul style="list-style-type: none"> • Comprehend pathophysiology of these disorders 	C2		
	<ul style="list-style-type: none"> • Know clinical presentation of hypertensive disorders 	C2		
	<ul style="list-style-type: none"> • Justify relevant laboratory investigations 	C2		
	<ul style="list-style-type: none"> • Understand principles of management 	C2		
	<ul style="list-style-type: none"> • Enlist maternal and fetal complications 	C2		
Obstetric shock	<ul style="list-style-type: none"> • Define circulatory shock 	C1	LGIS	MCQs
	<ul style="list-style-type: none"> • Differentiate between different types of shock in pregnancy according to their pathophysiology 	C2		
	<ul style="list-style-type: none"> • Appreciate clinical features of shock 	C2		
	<ul style="list-style-type: none"> • Enumerate common causes of hypovolemic shock in pregnancy 	C2		
	<ul style="list-style-type: none"> • Outline management of hypovolemic shock 	C2		

Padiatrics

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Murmurs	<ul style="list-style-type: none"> Differentiate between cyanotic and acyanotic congenital heart diseases on the basis of clinical features 	C2	LGIS	MCQs

Eye

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Retinal changes in hypertension	<ul style="list-style-type: none"> Define hypertensive retinopathy 	C1	LGIS CBL	MCQs
	<ul style="list-style-type: none"> Describe stages of hypertensive retinopathy 	C2		
	<ul style="list-style-type: none"> Explain pathophysiology of hypertensive retinopathy 	C2		

Behavioral Sciences & Biomedial Ethics

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Breaking bad news	<ul style="list-style-type: none"> To be able to break bad news to the patient or their families in clinical settings and dealing with emotions arising 	C2	LGIS CBL	MCQS
Stress and its management	<ul style="list-style-type: none"> To be able to define types of stress, its causes and management of stress 	C2	LGIS CBL	MCQS

Radiology

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Radiology of hip bone & Lower Limb	<ul style="list-style-type: none"> • Interpret normal x-rays of Hip bone & Lower Limb 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> • Discuss features of different Fractures of Hip Bone & Lower Limb 	C2		

Integrated Undergraduate Research Curriculum (IUGRC)

Session	Learning Objectives
Students Practical Session 5: (placement in 5 th Module) (work track & assessment by Logbook)	In supervised session, at the end of the session, participants would be able to; (Los) <ol style="list-style-type: none"> 1. Write the scientific references under some format. 2. Explain the Underlying areas of human health pertaining to topic of their individual group poster (clinical or basic science) at their level. 3. Relate their clinical or basic poster relevant learning with their formal learning during 1st year MBBS. 4. Write the scientific references under some format. 5. Explain the Underlying areas of human health pertaining to topic of their individual group poster (clinical or basic science) at their level. 6. Relate their clinical or basic poster relevant learning with their formal learning during 1st year MBBS.

Family Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Approach to a patient with chest pain	• Describe chest pain	C1	LGIS	MCQs
	• Discuss various causes	C2		
	• Explain the clinical presentation.	C2		
	• Enlist the lab investigations	C2		
	• Decision for referral of patient	C2		

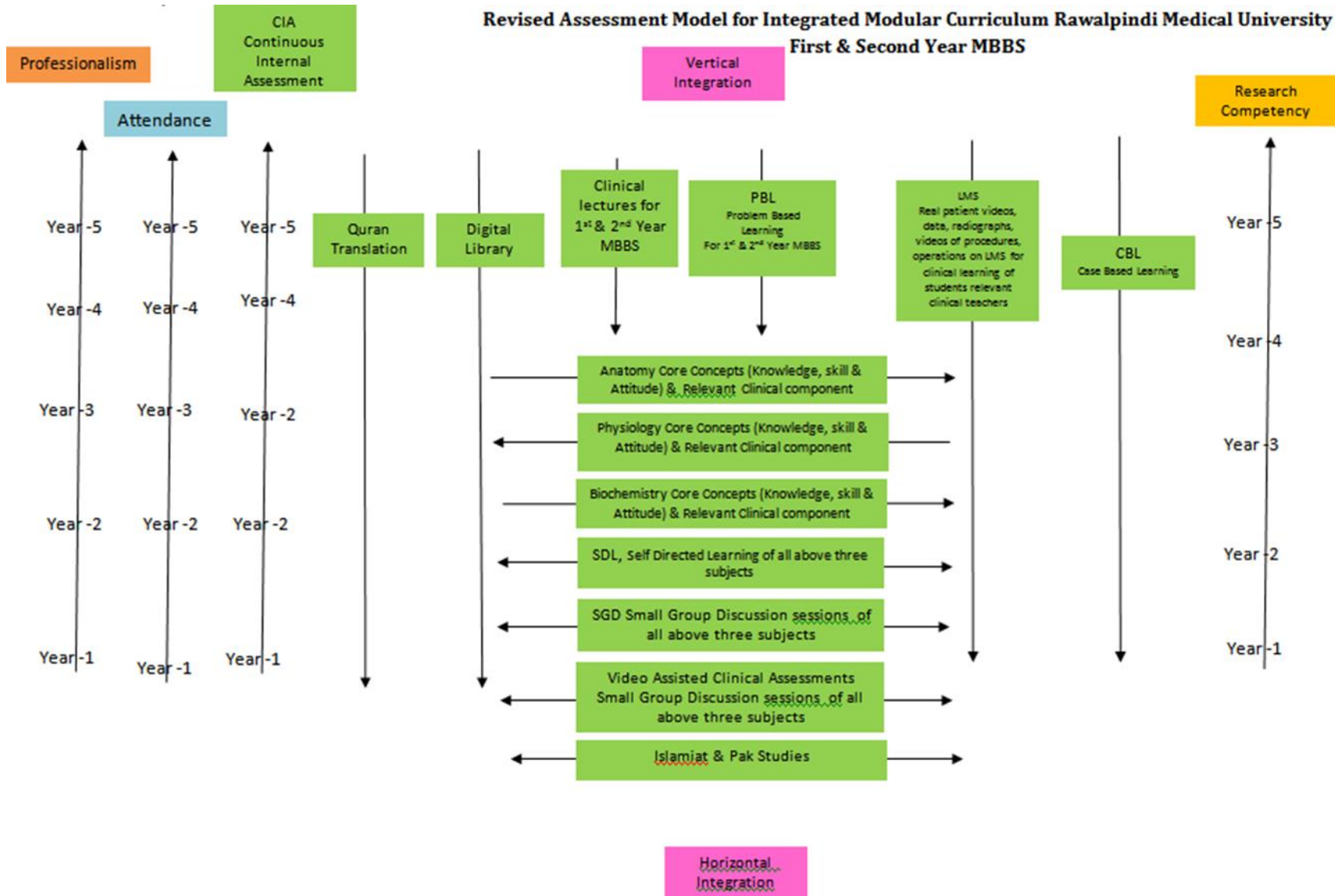
SECTION - IV

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in CVS Module**

Revised Assessment Model for Integrated Modular Curriculum Rawalpindi Medical University First & Second Year MBBS



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 - 74%	*75 - 80%	81 - 100%

90% is eligibility criteria for appearing in professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular, modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3 rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given the share according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based), modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in CVS Module

Block	Sr #	Module – 1 CVS Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures	Formative	15 Minutes				
	7	Assessment of Bioethics Lectures	Summative	2 Minutes				
	8	Assessment of IUGRC Lectures	Summative	10 Minutes				

Learning Resources

Subject	Resources
Anatomy	<p>A. Gross Anatomy</p> <ol style="list-style-type: none"> 1. Gray's Anatomy by Prof. Susan Standing 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III <p>B. Histology</p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. <p>C. Embryology</p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	<p>A. Textbooks</p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. <p>B. Reference Books</p> <ol style="list-style-type: none"> 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Harper's Illustrated Biochemistry 32th edition. 2. Lehninger Principle of Biochemistry 8th edition. 3. Lippincott Biochemistry 8th edition.
Community Medicine	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
Pharmacology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Lippincot Illustrated Pharmacology 9th edition. 2. Basic and Clinical Pharmacology by Katzung 5th edition.

SECTION - V

Time Table

Integrated Clinically Oriented Modular Curriculum for first Year MBBS

CVS Module Time Table

First Year MBBS

Session 2022-2023

Batch- 50

CVS Module Team

Module Name	:	CVS Module
Duration of module	:	05 Weeks
Coordinator	:	Dr. Aneela Yasmeen
Co-Coordinator	:	Dr. Sheena Tariq
Reviewed by	:	Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Aneela Yasmeen Senior demonstrator physiology
2.	Director DME	Prof. Dr. Rai Muhammad Asghar	2.	Co-coordinator	Dr. Kashif Senior Demonstrator of Biochemistry
3.	Convener Curriculum	Prof. Dr. Naeem Akhter	3.	DME Focal person	Dr. Sidra Hamid Assistant Professor Physiology
4.	Dean basic sciences and Chairperson Anatomy	Prof Dr. Ayesha Yousaf	4.	Co-coordinator	Dr. Ali Raza Demonstrator of Anatomy
5.	Additional Director DME	Prof. Dr. Ifra Saeed	5.	Co-coordinator	Dr. Sheena Tariq APWMO of Physiology
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar	DME Implementation Team		
7.	Chairperson Biochemistry	Dr. Aneela Jamil	1.	Director DME	Dr. Rai Muhammad Asghar
8.	Focal Person Anatomy	Prof Dr. Ayesha Yousaf	2.	Deputy Director DME	Dr. Shazia Zeb
9.	Focal Person Physiology	Dr. Sidra Hamid	3.	Implementation Incharge 1st&2 nd Year MBBS	Prof. Dr. Ifra Saeed
10.	Focal Person Biochemistry	Dr. Aneela Jamil	4.	Module planner & implementation coordinator	Dr. Sidra Hamid
11.	Focal Person Pharmacology	Dr. Zunera Hakim	5.	Editor	Muhammad Arslan Aslam
12.	Focal Person Medicine	Dr Madiha Nazar			
13.	Focal Person Pathology	Dr. Asiya Niazi			
14.	Focal Person Behavioral Sciences	Dr. Saadia Yasir			
15.	Focal Person Community Medicine	Dr. Afifa Kulsoom			
16.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar			

Discipline Wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
III	<ul style="list-style-type: none"> Anatomy Biochemistry 	<ul style="list-style-type: none"> Heart & Vessels 	<ul style="list-style-type: none"> Cardiovascular System 	<ul style="list-style-type: none"> Heart & Vessels 	<ul style="list-style-type: none"> Mediastinum, Heart, Great Vessels
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> Carbohydrate chemistry, Lipid chemistry The Heart as a Pump and Function of the Heart Valves & regulation of heart pumping, cardiac cycle Rhythmical Excitation of the Heart & Specialized excitatory & conductive system of the heart & its control (revisit) Electrocardiogram, its interpretation & its abnormalities Medical Physics of Pressure, Flow, and Resistance, Vascular Distensibility and Functions of the Arterial and Venous Systems Microcirculation and the Lymphatic System, Local and Humoral Control of Blood Flow by the Tissues Nervous Regulation of the Circulation, and Rapid & Long-Term Control of Arterial Pressure, hypertension Cardiac Output, Venous Return, and Their Regulation Muscle Blood Flow and Cardiac Output During Exercise; the Coronary & regional circulation Cardiac Failure, Circulatory Shock Heart Valves and Heart Sounds; Dynamics of Valvular and Congenital Heart Defects 			
	<ul style="list-style-type: none"> Behavioural Sciences, Bioethics & Professionalism 	<ul style="list-style-type: none"> Breaking the bad news Stigma to mental illness 			
	<ul style="list-style-type: none"> Radiology, Artificial Intelligence & Innovation 	<ul style="list-style-type: none"> Chest radiograph with perspective of cardiovascular system Radiology with perspective of Artificial Intelligence & Innovation. 			
	<ul style="list-style-type: none"> Family Medicine 	<ul style="list-style-type: none"> Approach to a patient with chest pain 			
	<ul style="list-style-type: none"> Research 	<ul style="list-style-type: none"> Research Club Activity (Synopsis writing) 			
	<ul style="list-style-type: none"> Vertical components 	<ul style="list-style-type: none"> The Holy Quran Translation Component 			
	<ul style="list-style-type: none"> Vertical Integration 	<ul style="list-style-type: none"> Clinically content relevant to CVS module Risk factors of coronary vascular disease (Community Medicine) Breaking bad news (Behavior Sciences) DME orientation/paper discussion (DME) Thrombosis & Infarction (Pathology) Approach to a patient with chest pain (Family Medicine) Hypertensive retinopathy (Eye) ECG Changes (MI, Electrical Imbalance, Myocardial hypertrophy) (Medicine) Overview of acute coronary syndrome & management of heart failure & management of shock (Medicine) Hypertension (Medicine) Clinical pharmacology of antihypertensive drugs (Pharmacology) Cardiovascular changes in pregnancy (Gynae & Obs) 			

Categorization of Modular Contents

Anatomy

Category A*	Category B**	Category C***			
		Demonstrations / SGD	CBL	SKL/Practical's	Self-Directed Learning (SDL)
<ul style="list-style-type: none"> Embryology 	<ul style="list-style-type: none"> Histology 	<ul style="list-style-type: none"> Thoracic Wall / Thoracic Vertebra Mediastinum Pericardium Heart (External Features) Heart (Internal Features) Heart (Clinical Correlations) Vasculature of heart Innervation of heart Superior mediastinum Posterior mediastinum (Contents) Posterior mediastinum (Azygous system of veins) Surface marking / Radiology 	<ul style="list-style-type: none"> Cardiac tamponade Coarctation of aorta 	<ul style="list-style-type: none"> Elastic arteries Medium and small sized arteries Large veins Medium and small sized veins 	<ul style="list-style-type: none"> Thoracic Wall / Thoracic Vertebra Pericardium Mediastinum Vasculature of heart Superior mediastinum Azygous system of veins

Category A*: By Professor

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resources of Department of Anatomy

Sr. #	Designation of Teaching Staff / Human Resource	Total Number of Teaching Staff
1.	Professor of Anatomy department	01
2.	Associate Professor	01
3.	Demonstrators of Anatomy department	04

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$2 * 10 = 20$ hours
2.	Small Group Discussions (SGD)	$2 * 13 = 26$ hours
3.	Practical / Skill Lab	$1.5 * 20 = 30$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$1 * 10 = 10$ hours
2.	Small Group Discussions (SGD)	$2 * 13 = 26$ hours
3.	Practical / Skill Lab	$1.5 * 4 = 6$ hours
4.	Self-Directed Learning (SDL)	$2 * 4 = 08$ hours

Physiology

Category A*	Category B**	Category C***				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
<ul style="list-style-type: none"> • Short term regulation of blood pressure (Prof. Dr. Samia Sarwar/Dr Fahad) • Long term regulation of blood pressure (Prof. Dr. Samia Sarwar/Dr Fahad) • Circulatory Shock (Prof. Dr. Samia Sarwar/Dr Fareed) • Coronary circulation, Atherosclerosis & acute coronary occlusion • Prof. Dr. Samia Sarwar/Dr Fahad 	<ul style="list-style-type: none"> • Cardiac output & its control, measurement of cardiac output, pathologically high and low cardiac output (By Dr Sidra) • Cardiac cycle - I, Events of cardiac cycle and its graphical representation (By Dr Sidra) • Cardiac cycle – II, Functions of ventricles as pumps, aortic pressure curve, regulation of heart pumping (By Dr Sidra) • Cardiac cycle, Events of cardiac cycle and its graphical representation, Functions of ventricles as pumps, aortic pressure curve, regulation of heart pumping (SDL) By Dr Sidra • Introduction to CVS (By Dr Fahad) • Classification of blood vessels & Biophysical considerations (By 	<p>One PBL In two sessions</p>	<ul style="list-style-type: none"> • Pitting edema • Palpitations/Tachycardia 	<ul style="list-style-type: none"> • Examination of arterial pulse • Determination of Jugular Venous Pressure (JVP) • Clinical examination of chest for CVS • Determination of Blood Pressure (BP) • Effect of exercise & posture on arterial blood pressure • Recording of Electrocardiography (ECG) • Cardiopulmonary resuscitation (CPR) Demonstration of Triple Response 	<ol style="list-style-type: none"> 1. Concept of vasomotion and starling forces 2. Regulation of blood pressure 3. Cardiac output and Venous return (second week) 4. ECG & its clinical importance (second week) 5. Arrhythmias (third week) 6. Short term regulation of blood pressure (fourth week) 7. Long term regulation of blood pressure (fourth week) 8. Coronary circulation, Atherosclerosis & acute coronary occlusion (fourth week) Cardiac cycle (fourth week) 	<ol style="list-style-type: none"> 1. SDL On Campus Heart Sounds 2. Capillary circulation, Concept of vasomotion and starling forces 3. Introduction to ECG & its clinical importance 4. Cardiac cycle - I, Events of cardiac cycle and its graphical representation 5. Arrhythmias 6. Congestive cardiac failure 7. Long term regulation of blood pressure 1. Skeletal muscle blood flow, Cardiovascular changes during exercise 1. SDL Off Campus Introduction to CVS 2. Classification of blood vessels & Biophysical considerations 3. Regulation of

	<ul style="list-style-type: none"> • Dr Aneela) • Heart Sounds (By Dr Uzma) • Regulation of blood flow (By Dr Aneela) • Capillary circulation, Concept of vasomotion and starling forces (By Dr Fahad) • Functions of veins, Venous return and factors affecting venous return (By Dr Kamil) • Introduction to ECG & its clinical importance (By Dr Fahad) • Vectorial analysis & arrhythmias I (By Dr Fahad) • Arrhythmias II (By Dr Fahad) • ECG changes in myocardial hypertrophies, ischemic heart disease (By Dr Fahad) • Congestive cardiac failure (By Dr Fareed) <ul style="list-style-type: none"> • Splanchnic circulation, cutaneous circulation (By Dr Fareed) • Skeletal muscle blood flow, Cardiovascular 					<p style="text-align: right;">blood flow</p> <ol style="list-style-type: none"> 4. Introduction to ECG & its clinical importance 5. Vectorial analysis & arrhythmias 6. Cardiac cycle 7. Splanchnic circulation, cutaneous circulation <p style="text-align: right;">Regulation of blood pressure</p>
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	<p>changes during exercise</p> <ul style="list-style-type: none"> • (By Dr Uzma) • Fetal circulation & cardiac abnormalities in fetal circulation • (By Dr Fahad) 					
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Category A*: By HOD and Associate Professor

Category B:** By All (HOD, Associate, Assistant, Senior Demonstrators)

Category C*:** By Demonstrators and Residents

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	$22 \times 1 = 22$ Hours
2.	Small Group Discussions (SGD)/CBL	$1.5 \times 4 = 6$ Hours + 8 Hours (2nd, 3rd, 4th week) = 14 Hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	$1.5 \times 4 = 6$ Hours
5.	Self-Directed Learning (SDL)	$8 \times 1 = 8$ Hours (On Campus) $8 \times 1 = 8$ Hours (Off Campus)

Biochemistry

Category A*	Category B**				
LGIS	LGIS	PBL	CBL	Practical's	SGD
<ul style="list-style-type: none"> • Simple Lipids • Compound Lipids (phospholipids, glycolipids, lipoproteins) • Prostaglandins 	<ul style="list-style-type: none"> • Definition and Biological importance of Lipids • Fatty acids • Derived lipids • Cholesterol • Introduction and classification of carbohydrates • Isomerism, optical activity and mutarotation • Monosaccharide • Disaccharides • Homopolysaccharides • Heteropolysaccharides 		<ul style="list-style-type: none"> • Atherosclerosis • Heteropolysaccharides 	<ul style="list-style-type: none"> • Lipid solubility • Benedict's test and Molisch's test • Barfoed's Test and Selivanoff's test • Iodine Test 	<ul style="list-style-type: none"> • Classification of carbohydrates and lipids • Classification and properties of fatty acids

Category A*: By HOD and Assistant Professor

Category B:** By All (HOD, Assistant Professors, Senior Demonstrators)

Category C*:** (By All Demonstrators)

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1	Assistant professor of biochemistry department (AP)	01
2	Demonstrators of biochemistry department	07

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	$2 * 8 = 16$ hours	08
2.	Small Group Discussions (SGD)	$1.5 * 5 = 7.5$ hours	06
3.	Problem Based Learning (PBL)	Zero	zero
4.	Practical / Skill Lab	$1.5 * 5 = 7.5$ hours	6
5.	Self-Directed Learning (SDL)	-----	08

Timetable For CVS Module 28-08-2023 TO 02-09-2023 (First Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM	11:00AM-12:00 PM	12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)			
28-08-2023 MONDAY	DISSECTION/SGD		COMMUNITY MEDICINE (LGIS)		PHYSIOLOGY (LGIS)		Practical &CBL Topics mentioned at the end	SDL Physiology Introduction to CVS		
	Thoracic Wall / Thoracic Vertebra		Risk factors of coronary vascular disease		Introduction to CVS	Classification of Blood vessels & Biophysical considerations				
			Dr Rizwana (Even)	Dr Asif (Odd)	Dr Fahad (Even)	Dr. Aneela (Odd)				
29-08-2023 TUESDAY	Behavioural Sciences		BIOCHEMISTRY (LGIS)		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)			
	Breaking the bad news		Introduction and classification of carbohydrates & Isomerism	Introduction and classification of lipids &Fatty acids	Development of CVS (Development of Veins)	General Anatomy of CVS (General Organization)	Classification of Blood vessels & Biophysical considerations	Introduction to CVS	Practical &CBL Topics mentioned at the end	SDL Physiology Classification of Blood vessels & Biophysical considerations
Dr. Sadia Yasir (Even)	Dr. Zarnain (Odd)	Dr. Isma (Even)	Dr. Uzma Zafar (Odd)	Prof. Dr. Ayesha (Even)	Assist. Prof. Dr. Arsalan (Odd)	Dr. Aneela (Even)	Dr Fahad (Odd)			
30-08-2023 WEDNESDAY	BIOCHEMISTRY (LGIS)		PYYSICAL ACTIVITY		ANATOMY (LGIS)		DME ORIENTATION SESSION		Practical &CBL Topics mentioned at the end	SDL Biochemistry Classification & functions of carbohydrates
	Introduction and classification of lipids &Fatty acids	Introduction and classification of carbohydrates & Isomerism			General Anatomy of CVS (General Organization)	Development of CVS (Development of Veins)	Paper discussion	Module orientation & discussion on feedback		
	Dr. Uzma Zafar (Even)	Dr. Isma (Odd)	Assist. Prof. Dr. Arsalan (Even)	Prof. Dr. Ayesha (Odd)	All departments (Even)	Dr Sidra / Dr. Saira				
31-08-2023 THURSDAY	DISSECTION/SGD		PHYSIOLOGY (LGIS)		ANATOMY (LGIS)		PHYSIOLOGY SDL No. 01		Practical &CBL Topics mentioned at the end	SDL Biochemistry Classification & functions of lipids
	Mediastinum (General Features & Divisions)		Heart sounds	Regulation of blood flow	General Anatomy of CVS (Classification of	Development of CVS (Aortic Arches and	Heart sounds			
			Dr. Uzma(even)	Dr. Aneela (Odd)	Assist. Prof. Dr. Arsalan (Even)	Prof. Dr. Ayesha (Odd)	Dr. Uzma (even)	Dr. Iqra (Odd)		
01-09-2023 FRIDAY	QURAN TRANSLATION-I		QURAN TRANSLATION-II		PHYSIOLOGY (LGIS)		DME ORIENTATION SESSION		SDL Anatomy Thoracic Wall / Thoracic Vertebrae	
	Mumamat-I	muashrat-II	muashrat-II	Mumamat-I	Regulation of blood flow	Heart sounds	Module orientation & discussion on feedback	Paper discussion		
	Mufti Naeem (Even)	Molana Abdul Wahid (Odd)	Molana Abdul Wahid (Even)	Mufti Naeem (Odd)	Dr. Aneela (even)	Dr. Uzma (Odd)	Dr Sidra / Dr. Saira	All departments (Odd)		
02-09-2023 SATURDAY	DISSECTION/CBL			RADIOLOGY (LGIS)		PHYSIOLOGY (LGIS)		Practical &CBL Topics mentioned at the end	SDL Anatomy Pericardium/ Mediastinum	
	Pericardium / CBL			Chest radiograph with perspective of cardiovascular system		Capillary circulation, Concept of vasomotion and startling forces	Functions of veins, Venous return and factors affecting venous return			
			Dr Aniqua (even)	Dr. Fiza (even)	Dr. Fahad (Even)	Dr. Kamil (Odd)				

B R E A K
B R E A K

Topics for Practical with Venue						Topics for Small Group Discussion& CBLs				
<ul style="list-style-type: none"> Elastic Arteries (Anatomy/ Histology-practical) venue Histology Laboratory Lipid solubility (Biochemistry practical) venue- Biochemistry Laboratory Examination of arterial pulse (Physiology –practical) Physiology Laboratory Determination of Jugular Venous Pressure (JVP) (Physiology –practical) Physiology Laboratory 						<ul style="list-style-type: none"> Biochemistry tutorial – classification of carbohydrates and lipids Concept of vasomotion and starling forces. (SGD) (Physiology Lecture Hall No.05) 				
Schedule for Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	1-90	Dr Ali Raza	Lecture Hall No.04 (Anatomy)	
Tuesday	D	C	A	B	E	B	91-180	Dr. Quratulain Shareef	Lecture Theatre Complex No.03	
Wednesday	E	D	B	C	A	C	180-270	Dr. Zaneera Saqib	Lecture Theatre Complex No.02	
Thursday	B	A	D	E	C	D	271 onwards	Dr Urooj Shah	Lecture Hall No. 03 (Anatomy)	
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL &SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani		2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar		3.	Batch –C	141-210	Dr. Romessa Naeem	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah		4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch -E	281-onwards	Dr. Nayab	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Romesa (PBL)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03	
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Afsheen (pgt physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02	
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						
						Venues for Large Group Interactive Session (LGIS) and SDL				

Timetable For CVS Module
04-09-2023 TO 09-09-2023 (Second Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM	11:00AM-12:00 PM	12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)			
04-09-2023 MONDAY	DISSECTION/CBL		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		B R E A K	Practical & CBL Topics mentioned at the end	SDL Physiology Regulation of blood flow	
	Heart (External Features)		Development of CVS (Aortic Arches and derivatives) Prof. Dr. Ayesha (Even)	General Anatomy of CVS (Classification of vessels) Assist. Prof. Dr. Arsalan (Odd)	Functions of veins, Venous return and factors affecting venous return Dr Kamil (Even)	Capillary circulation, Concept of vasomotion and starling forces Dr Fahad (Odd)				
05-09-2023 TUESDAY	DISSECTION/SGD		PATHOLOGY (LGIS)		PHYSIOLOGY (LGIS)		B R E A K	Practical & CBL Topics mentioned at the end	SDL Physiology Introduction to ECG & its clinical importance	
	Heart (Internal Features)		Edema		Capillary circulation, Concept of vasomotion and starling forces (SDL) Dr Maryam (Even)	Cardiac output & its control, measurement of cardiac output, pathologically high and low cardiac output-I Dr Sidra (Odd)				
06-09-2023 WEDNESDAY	DISSECTION/SGD		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		B R E A K	Practical & CBL Topics mentioned at the end	SDL Biochemistry Fatty acids & Simple lipids	
	Heart (Clinical Correlations of Heart)		Histology of CVS (Arteries and Veins) Assoc. Prof. Dr. Mothashim (Even)	Development of CVS (Formation, Position and Partitioning of heart tube) Prof. Dr. Ayesha (Odd)	Cardiac output & its control, measurement of cardiac output, pathologically high and low cardiac output-II Dr. Sidra (Odd)	Introduction to ECG & its clinical importance Dr Fahd (Even)				
07-09-2023 THURSDAY	HOLIDAY									
08-09-2023 FRIDAY	QURAN TRANSLATION -III		QURAN TRANSLATION -IV		PHYSIOLOGY (LGIS)		BIOCHEMISTRY (LGIS)		B R E A K	SDL Anatomy Heart
	Mumamalat -II	Ekhlaqiaat-I	Ekhlaqiaat-I	Mumamalat-II	Vectorial analysis & arrhythmias I Dr. Fahad (even)	Cardiac cycle - I, Events of cardiac cycle and its graphical representation Dr Sidra (Odd)	Mutarotation & Monosaccharides & their chemical reaction Dr. Isma (even)	Simple lipids & Compound lipids Dr. Aneela (Odd)		
09-09-2023 SATURDAY	BEHAVIOUR SCIENCES		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		B R E A K	Practical & CBL Topics mentioned at the end	SDL Anatomy Vassculture of Heart	
	Stigma to mental illness Dr. Azeem Rao (Even) Dr. Quratulain (Odd)		Simple lipids & Compound lipids Dr. Aneela (even)	Mutarotation & Monosaccharides & their chemical reaction Dr. Isma (Odd)	Practical (Skill Lab) / SGD(CBL) Dated 07-09-2023 Thursday batches					Cardiac cycle - I, Events of cardiac cycle and its graphical representation Dr Sidra (even)	Vectorial analysis & arrhythmias I Dr.Fahd (Odd)

Topics For Practical With Venue						Topics For Small Group Discussion& CBLs With Venue				
<ul style="list-style-type: none"> • Medium & Small Sized Arteries (Anatomy/ Histology-practical) venue Histology Laboratory • Molisch's Test & Benedict's Test (Biochemistry practical) venue- Biochemistry Laboratory • Clinical examination of chest for CVS (Physiology –practical) Physiology Laboratory • Determination of Blood Pressure (BP) (Physiology –practical) Physiology Laboratory 						<ul style="list-style-type: none"> • Biochemistry tutorial – Classification & Properties of Fatty Acids. (Biochemistry Basement demo room) • Physiology CBL- Pitting edema (Physiology Lecture Hall No.05) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	1-90	Dr Ali Raza	Lecture Hall No.04 (Anatomy)	
Tuesday	D	C	A	B	E	B	91-180	Dr. Quratulain Shareef	Lecture Theatre Complex No.03	
Wednesday	E	D	B	C	A	C	180-270	Dr. Zaneera Saqib	Lecture Theatre Complex No.02	
Thursday	B	A	D	E	C	D	271 onwards	Dr Urooj Shah	Lecture Hall No. 03 (Anatomy)	
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL &SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani		2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar		3.	Batch –C	141-210	Dr. Romessa Naeem	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah		4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch -E	281-onwards	Dr. Nayab	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)		Venues for Large Group Interactive Session (LGIS) and SDL				
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Romesa (PBL)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03	
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Afsheen (PGT Physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02	
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Timetable For CVS Module 11-09-2023 TO 15-09-2023 (Third Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM	11:00AM-12:00 PM	12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)		
11-09-2023 MONDAY	DISSECTION/CBL		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		B R E A K	Practical &CBL Topics mentioned at the end	SDL Physiology Regulation of BP
	Vassculature of Heart / CBL		Development of CVS (Formation, Position and Partitioning of heart tube)	Histology of CVS (Arteries and Veins)	Arrhythmias II	Cardiac cycle – II, Functions of ventricles as pumps, aortic pressure curve, regulation of heart pumping			
12-09-2023 TUESDAY	DISSECTION/SGD		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		B R E A K	Practical CBL Topics mentioned at the end	SDL Physiology Regulation of BP
	Innervation of Heart		Development of CVS (Formation and partitioning of Ventricles)	Histology of CVS (Capillaries)	Cardiac cycle – II, Functions of ventricles as pumps, aortic pressure curve, regulation of heart pumping	Arrhythmias II			
13-09-2023 WEDNESDAY	BIOCHEMISTRY (LGIS)		FAMILY MEDICINE		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		B R E A K
	Derived lipids	Disaccharides &homopolysacchar ides	Approach to a patient with chest pain		Histology of CVS (Capillaries)	Development of CVS (Formation and partitioning of Ventricles)	ECG changes in myocardial hypertrophies, ischemic heart disease	Short term regulation of blood pressure	
14-09-2023 THURSDAY	ANATOMY (SGD)		ARTIFICIAL INTELLIGENCE		PHYSIOLOGY (LGIS)		B R E A K	Practical &CBL Topics mentioned at the end	SDL Biochemistry Compound lipids
	Superior Mediastinum (Trachea, Esophagus Ascending Aorta)		Guest Lecture		Short term regulation of blood pressure	ECG changes in myocardial hypertrophies, ischemic heart disease			
15-09-2023 FRIDAY	EYE (LGIS)		BIOCHEMISTRY (LGIS)		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		B R E A K
	Hypertensive Retinopathy		Disaccharides &homopolysacc harides	Derived lipids	Development of CVS (Fetal Circulation)	Histology of CVS (Tunics of heart & Lyphatic System)	Congestive cardiac failure	Long term regulation of blood pressure	
16-09-2023 SATURDAY	DISSECTION/SGD		RESEARCH CLUB ACTIVITY		PHYSIOLOGY (LGIS)		B R E A K	Practical &CBL Topics mentioned at the end	SDL Anatomy Superior Mediastinum
	Posterior mediastinum (Contents)		IUGRC		Long term regulation of blood pressure	Congestive cardiac failure			

Topics For Practical With Venue						Topics For Small Group Discussion& CBLs With Venue				
<ul style="list-style-type: none"> • Large Veins (Anatomy/ Histology-practical) venue Histology Laboratory • Selivanoff's Test & Barfoed's Test (Biochemistry practical) venue- Biochemistry Laboratory • Effect of exercise and posture on arterial blood pressure (Physiology –practical) Physiology Laboratory • Recording of Electrocardiography (ECG) (Physiology –practical). Physiology Laboratory 						<ul style="list-style-type: none"> • Biochemistry CBL- Atherosclerosis. • Physiology CBL Palpitations / Tachycardia (Physiology Lecture Hall No.05) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	1-90	Dr Ali Raza	Lecture Hall No.04 (Anatomy)	
Tuesday	D	C	A	B	E	B	91-180	Dr. Quratulain Shareef	Lecture Theatre Complex No.03	
Wednesday	E	D	B	C	A	C	180-270	Dr. Zaneera Saqib	Lecture Theatre Complex No.02	
Thursday	B	A	D	E	C	D	271 onwards	Dr Urooj Shah	Lecture Hall No. 03 (Anatomy)	
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL &SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani		2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar		3.	Batch –C	141-210	Dr. Romessa Naeem	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah		4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch -E	281-onwards	Dr. Nayab	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)		Venues for Large Group Interactive Session (LGIS) and SDL				
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03	
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Afsheen (PGT Physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02	
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Timetable For CVS Module
18-09-2023 TO 22-09-2023 (Fourth Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM	11:00AM-12:00 PM	12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)			
18-09-2023 MONDAY	MEDICINE		PHYSIOLOGY (LGIS)		PHYSIOLOGY (LGIS)		Practical &CBL Topics mentioned at the end	SDL Physiology Vectorial analysis & arrhythmias		
	Overview of acute coronary syndrome & Management of heart failure & Management of shock		Splanchnic circulation, cutaneous circulation	Skeletal muscle blood flow, Cardiovascular changes during exercise	Practical (Skill Lab) / SGD(CBL) Dated 23-09-2023 Saturday batches	Fetal circulation & cardiac abnormalities in fetal circulation			Circulatory shock	
	Dr. Asad cardiologist (Even)	Dr. Hasnain (Odd)	Dr.Fareed(Even)	Dr Uzma (Odd)			Dr.Fahad (Even)	Prof. Dr. Samia Sarwar / Dr. Fareed (Odd)		
19-09-2023 TUESDAY	MEDICINE(LGIS)		PHYSIOLOGY (LGIS)		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)			
	Hypertension		Skeletal muscle blood flow, Cardiovascular changes during exercise	Splanchnic circulation, cutaneous circulation	Histology of CVS (Tunics of heart & Lyphatic System)	Development of CVS (Fetal Circulation)	Circulatory shock	Fetal circulation & cardiac abnormalities in fetal circulation	Practical &CBL Topics mentioned at the end	SDL Physiology Cardiac cycle Online ClinicalEvaluation
	Dr. Asad cardiologist (Even)	Dr. Hasnain (Odd)	Dr.Uzma(Even)	Dr. Fareed (Odd)	Assoc. Prof. Dr. Mothashim (Even)	Prof. Dr. Ayesha (Odd)	Prof. Dr. Samia Sarwar / Dr. Fareed (Even)	Dr.Fahad (Odd)		
20-09-2023 WEDNESDAY	PHARMACOLOGY		BIOCHEMISTRY(LGIS)		GYNAE & OBS (LGIS)		PHYSIOLOGY (LGIS)			
	Clinical Pharmacology of Anti hypertensive drugs		Heteropolysaccharides	Prostaglandins	Hypertensive disorders in pregnancy (gestational hypertension, pre-eclampsia)		Coronary circulation, Atherosclerosis & acute coronary occlusion	Long & Short term regulation of blood pressure	Practical &CBL Topics mentioned at the end	SDL Biochemistry Prostaglandins
	(Even)	(Odd)	Dr. Isma (even)	Dr. Aneela (Odd)	Dr. Saima Khan(Even)	Dr. Sadia Bano (Odd)	Prof..Dr. Samia/ Dr. kamil (Even)	Dr. Najam SDL (Odd)		
21-09-2023 THURSDAY	DISSECTION/SGD				BIOCHEMISTRY(LGIS)		PHYSIOLOGY (LGIS)			
	Posterior Mediastinum (Azygous system of Veins)				Prostaglandins	Heteropolysaccharides	Long & Short term regulation of blood pressure	Coronary circulation, Atherosclerosis & acute coronary occlusion	Practical &CBL Topics mentioned at the end	SDL Biochemistry Heteropoly saccharides
				Dr. Aneela (even)	Dr. Isma (Odd)	Dr. Najam SDL (Even)	Prof. Dr. Samia/ Dr.Kamil (Odd)			
22-09-2023 FRIDAY	PHYSIOLOGY (SDL)		Physical Activity		DISSECTION/SGD					
	Skeletal muscle blood flow, Cardiovascular changes during exercise				Surface Marking / Radiology					
	Dr. Uzma								SDL Anatomy Posterior Mediastinum	SDL PATHOLOGY Shock
23-09-2023 SATURDAY	SDL				Break						SDL Anatomy Azygous System of Veins

B R E A K

Topics For Practical With Venue						Topics For Small Group Discussion& CBLs With Venue				
<ul style="list-style-type: none"> • Medium & Small Sized Veins (Anatomy/ Histology-practical) venue Histology Laboratory • Iodine Test (Biochemistry practical) venue- Biochemistry Laboratory • Cardiopulmonary resuscitation (CPR) (Physiology –practical) Physiology Laboratory • Demonstration of Triple Response (Physiology –practical) (Physiology Physiology Laboratory 						<ul style="list-style-type: none"> • Biochemistry Heteropolysaccharides CBL (Biochemistry Basement demo room) • Physiology tutorial- Regulation of blood pressure (Physiology Lecture Hall No.05) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches for Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	1-90	Dr Ali Raza	Lecture Hall No.04 (Anatomy)	
Tuesday	D	C	A	B	E	B	91-180	Dr. Quratulain Shareef	Lecture Theatre Complex No.03	
Wednesday	E	D	B	C	A	C	180-270	Dr. Zaneera Saqib	Lecture Theatre Complex No.02	
Thursday	B	A	D	E	C	D	271 onwards	Dr Urooj Shah	Lecture Hall No. 03 (Anatomy)	
Saturday	A	E	C	D	B					
Venue For First Year Batches For PBL &SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue		Biochemistry	Physiology					
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq	1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq	
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani	2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani	
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar	3.	Batch –C	141-210	Dr. Romessa Naeem	Dr. Fahd Anwar	
Batch-B2	(106-140)	Conference room (Basement)		Dr. Fareedullah	4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish	
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)	5.	Batch -E	281-onwards	Dr. Nayab	Dr. Fareed	
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)	Venues for Large Group Interactive Session (LGIS) and SDL					
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Romesa (PBL)	Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03		
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Afsheen (PGT Physiology)	Even Roll Number			New Lecture Hall Complex Lecture Theater # 02		
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						

Next Week Will Be Assessment Week. The Detail of Assessment Week Will Be Shared Once Finalized.

**Timetable for CVS Module
25-09-2023 TO 30-09-2023 (Fifth Week)**

DAY/ TIME	8:00AM-9:0AM	02:00pm – 03:00pm
25-09-2023 MONDAY	ANATOMY /PHYSIOLOGY VIVA VOCE	
26-09-2023 TUESDAY	ANATOMY /PHYSIOLOGY VIVA VOCE	
27-09-2023 WEDNESDAY	ANATOMY THEORY PAPER	
28-09-2023 THURSDAY	SDL	
29-09-2023 FRIDAY	PHYSIOLOGY THEORY PAPER	
30-09-2023 SATURDAY	BIOCHEMISTRY THEORY PAPER & ALLIEDs	

SECTION VI

Table of Specification (TOS) For CVS Module Examination

Sr. #	Discipline	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Viva voce	Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3		
1.	Anatomy	25	15	5	5	5	25	1	2	2	60	110
2.	Physiology	40	24	12	4	4	20	1	2	1	25	85
3.	Biochemistry	7	4	3	-	3	15	0.5	1.5	-	-	22
4.	Bioethics / Behavioural Sciences	4	-	3	2	-	-	-	-	-	-	4
5.	Research, Artificial Intelligence & Innovation	5	-	3	2	-	-	-	-	-	-	5
6.	Pathology	3	-	2	1	-	-	-	-	-	-	3
7.	Medicine	5	-	3	2	-	-	-	-	-	-	5
8.	Surgery	3	-	2	1	-	-	-	-	-	-	3
9.	Obs & Gynaecology	5	-	3	2	-	-	-	-	-	-	5
10.	Community Medicine	3	-	2	2	-	-	-	-	-	-	4
11.	Family Medicine	1		0	1							1
\Grand Total												246

Annexure I

(Sample MCQ, & SEQ Papers)

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
1ST YEAR MBBS MCQS CVS MODULE EXAM

1. A medical student while studying a lung specimen noticed number of grooves on the mediastinal surface of left lung, most likely structure producing these grooves is
 - a. Azygous vein
 - b. Inferior vena cava
 - c. Right lymphatic duct
 - d. Ascending aorta
 - e. Esophagus
2. The structure of right ventricle that lodges RBB of conducting system is
 - a. Supraventricular crest
 - b. Septomarginal trabeculae
 - c. Trabeculae carniae
 - d. Septal papillary muscle
 - e. Chordate tendinae
3. The direct branches of descending thoracic aorta are
 - a. Inferior thyroid artery
 - b. left subclavian artery
 - c. Internal thoracic artery
 - d. Right bronchial artery
 - e. Posterior intercostals for 3-11 intercostal spaces
4. In anteroseptal wall MI the posterior 1/3rd of interventricular septum was spared because it receives its blood supply from
 - a. Marginal branch of RCA
 - b. Anterior descending artery
 - c. Posterior descending artery
 - d. Circumflex artery
 - e. Diagonal artery
5. In anteroseptal wall MI the posterior 1/3rd of interventricular septum was spared because it receives its blood supply from
 - a. Marginal branch of RCA
 - b. Anterior descending artery
 - c. Posterior descending artery
 - d. Circumflex artery
 - e. Diagonal artery

RAWALPINDI MEDICAL UNIVERSITY
CVS MODULE EXAMINATION
1ST YEAR MBBS
ANATOMY, SEQ'S PAPER

1. a. Give characteristic features of interior of right ventricle. (3)
- b. What is a moderator band? (1)
- c. Define sudden death syndrome. (1)
2. a. Discuss formation and partitioning of heart tube. (3)
- b. Enlist different types of interatrial septal defects. (2)

RAWALPINDI MEDICAL UNIVERSITY
CVS MODULE EXAMINATION
1ST YEAR MBBS
PHYSIOLOGY, MCQ PAPER

1. When the radius of resistance vessels is increased there will be increase in:
 - a. Capillary blood flow
 - b. Diastolic blood pressure
 - c. Hematocrit
 - d. Systolic blood pressure
 - e. Viscosity of blood
2. Turbulence in a blood vessel is inversely proportional to the:
 - a. Viscosity of blood
 - b. Velocity of blood flow
 - c. Diameter of the vessel
 - d. Density of fluid inside the vessel
 - e. Reynolds' number
3. A physiologist while teaching the concept of Starling forces directs his students with the subsequent data to calculate the net force. Pressure in the capillary in muscle= 35 mm Hg at the arteriolar end, 14 mm Hg at the venular end. The interstitial pressure= 0 mm Hg. The colloid osmotic pressure is 25 mm Hg in capillary and 1 mm Hg in interstitium. The net force producing fluid movement across the capillary wall at its arteriolar end is:
 - a. 10mmHg filtration
 - b. 11mmHg filtration
 - c. 11mmHg reabsorption
 - d. 3mmHg filtration
 - e. 3mmHg reabsorption
4. In local control of blood flow the most significant regulatory mechanism is the:
 - a. Release of adrenal medullary catecholamines
 - b. Local concentration of metabolites
 - c. Local concentration of cellular nutrients
 - d. Sympathetic activation of blood vessels
 - e. Sympathetic inhibition of blood vessels
5. Neural control of circulation predominates over local control in the:
 - a. Brain
 - b. Heart
 - c. Kidney
 - d. Skeletal muscle
 - e. Skin

RAWALPINDI MEDICAL UNIVERSITY
CVS MODULE EXAMINATION
1ST YEAR MBBS
PHYSIOLOGY, SEQ'S PAPER

Q.1 Draw and label a normal electrocardiogram. Give the normal duration of PR interval, in which condition it is prolonged. (3,2)

Q.2 Define cardiac output. Give its normal values in males and females. Enlist factors causing hypoeffective heart. (2, 3)

RAWALPINDI MEDICAL UNIVERSITY DEPARTMENT OF BIOCHEMISTRY
1ST YEAR MBBS
CVS MODULE

1. The process of interconversion of anomeric forms of sugars is called as
 - a. Fermentation
 - b. Epimerism
 - a. Mutarotation
 - c. Ester formation
 - d. Autorotation
2. The following is the dimer of glucose only
 - a. Sucrose
 - b. Lactose
 - b. Maltose
 - c. Mannose
 - d. Ribose
3. The following sugar does not form the osazone crystals
 - a. Lactose
 - b. Maltose
 - c. Glucose
 - d. Fructose
 - c. Sucrose
4. Cholesterol is involved in the synthesis of the following type of hormones
 - a. Peptide
 - d. Steroid
 - b. Amine derivative
 - c. Protein
 - d. Glycoprotein

SEQ

- Q. a. Define with examples: anomers and epimers. 02
- b. Describe structure and functions of glycolipids. 03

RAWALPINDI MEDICAL UNIVERSITY DEPARTMENT OF BIOETHICS
1ST YEAR MBBS
CVS MODULE


1. ---Includes rules of conduct that may be used to regulate our activities concerning the biological world.
 - a. Bio-piracy
 - b. Biosafety
 - c. Bioethics
 - d. Bio-patents
 - e. Bio-logistic
2. The right of patients having self-decision is called.
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
3. Following is not code of ethics.
 - a. Integrity
 - b. Objectivity
 - c. Confidentiality
 - d. Behaviour
 - e. Autonomy
4. -----in the context of medical ethics, if it's fair and balanced
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
5. -----Principle requiring that physicians provide, positive benefits
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity



Respiration Module

Study Guide
First Year MBBS 2022 - 2023



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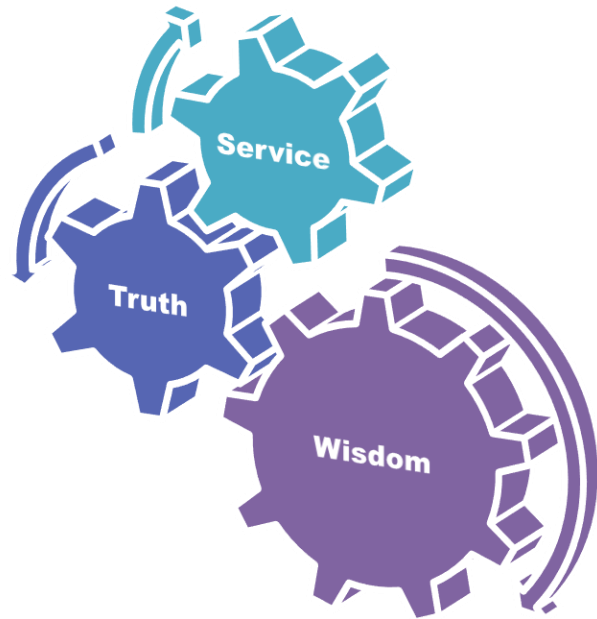
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University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

Second Year MBBS 2023

Study Guide

Respiratory Module

Discipline Wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
III	<ul style="list-style-type: none"> Anatomy 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Embryology of Respiratory System 	Histology of Upper & Lower <ul style="list-style-type: none"> Respiratory System 	<ul style="list-style-type: none"> Gross Anatomy of Upper & Lower Respiratory System
	<ul style="list-style-type: none"> Biochemistry 	<ul style="list-style-type: none"> pH, Electron transport chain, Oxidative phosphorylation, Water soluble vitamins riboflavin, biotin, pyridoxine, pantothenic acid, Normal acid base regulation 			
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> Pulmonary Ventilation, Pulmonary Volumes and Capacities, Alveolar Ventilation, Functions of the Respiratory Passageways Pulmonary Circulation, Pulmonary Edema, Physical Principles of Gas Exchange; Diffusion of Oxygen and Carbon Dioxide Through the Respiratory Membrane Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids Regulation of Respiration Useful Methods for Studying Respiratory Abnormalities, Respiratory Insufficiency, Hypoxia & Oxygen Therapy, Hypercapnia & Artificial Respiration Respiratory changes during Exercise, Aviation, Space & Deep-Sea Diving Physiology 			
	<ul style="list-style-type: none"> Research Club Activity (IUGRC) 	<ul style="list-style-type: none"> Poster Presentation 			
	<ul style="list-style-type: none"> Artificial Intelligence 	<ul style="list-style-type: none"> Artificial Intelligence basic concepts 			
	<ul style="list-style-type: none"> Family Medicine 	<ul style="list-style-type: none"> Approach to a patient with cough hemoptysis & shortness of breath 			
	<ul style="list-style-type: none"> Climate Change & Health 	<ul style="list-style-type: none"> Effects of Climate Changes on Body Systems (IHD, Skin Diseases & Heat Stroke) Effects of Climate Changes on Respiratory System (Asthma, COPD, Allergies & Cancers) Greenhouse effect Global warming and climate change 			
	<ul style="list-style-type: none"> Bioethics Professionalism & Behavioral Sciences 	<ul style="list-style-type: none"> Crises intervention and disaster Conflict resolution and empathy 			
	<ul style="list-style-type: none"> Vertical components Vertical Integration 	<ul style="list-style-type: none"> The Holy Quran Translation Component Clinically Content Relevant to Respiratory Module Tuberculosis (Medicine) Clinical disorders of Respiration (Pathology) Foreign body nose & ear & Tonsillitis (ENT) 			

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Respiration Module Team

Module Name	:	Respiration Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Kamil
Co- Coordinator	:	Dr. Fareed Ullah
Review by	:	Module Committee

Module Committee		Module Task Force	
Vice Chancellor RMU	Prof. Dr. Muhammad Umar	Coordinator	Dr. Kamil
Director DME	Prof. Dr. Rai Muhammad Asghar	DME Focal Person	Dr. Sidra Hamid
Convener Curriculum	Prof. Dr. Naeem Akhter	Co-coordinator	Dr. Quratulain Sharif (Senior Demonstrator of Anatomy)
Chairperson Anatomy & Dean Basic Sciences	Prof Dr. Ayesha Yousaf	Co-Coordinator	Dr. Uzma Zafar (Senior Demonstrator Biochemistry)
Additional Director DME	Prof. Dr. Ifra Saeed	Co-coordinator	Dr. Fareed Ullah (Senior Demonstrator Physiology) & Clinical Co- Coordinator
Chairperson Physiology	Prof. Dr. Samia Sarwar		
Chairperson Biochemistry	Dr. Aneela Jamil	DME Implementation Team	
Focal Person Anatomy First Year MBBS	Prof Dr. Ayesha Yousaf	Director DME	Prof. Dr. Rai Muhammad Asghar
Focal Person Physiology	Dr. Sidra Hamid	Implementation In charge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
Focal Person Biochemistry	Dr. Aneela Jamil	Deputy Director DME	Dr. Shazia Zeb
Focal Person Pharmacology	Dr. Zunera Hakim	Module planner & Implementation coordinator	Dr. Sidra Hamid
Focal Person Pathology	Dr. Asiya Niazi	Editor	Muhammad Arslan Aslam
Focal Person Behavioral Sciences	Dr. Saadia Yasir		
Focal Person Community Medicine	Dr. Afifa Kulsoom		
Focal Person Quran Translation Lectures	Dr. Fahd Anwar		

Module IV – Respiratory Module

Rationale: A respiratory system's function is to allow gas exchange. The space between the alveoli and the capillaries, the anatomy or structure of the exchange system, and the precise physiological uses of the exchanged gases vary depending on the organism. In humans respiratory system include airways, lungs, and the respiratory muscles. Molecules of oxygen and carbon dioxide that are passively exchanged, by diffusion, between the gaseous external environment and the blood. This exchange process occurs in the alveolar region of the lungs.

In this present module has been designed to unfold structural organization function congenital anomalies and diseases of respiration. It explains the anatomy, control, gases exchange, reflexes of respiratory system. It also helps to include the radiological examination of the respiratory system.

Module Outcomes

At the end of this module the student should be able to:

Knowledge:

1. Integrate the basic science knowledge with clinical sciences in order to describe the pathogenesis, clinical presentations of common respiratory disorders, e.g. COPD
2. Use technology based medical education including **Artificial Intelligence.**
3. Appreciate concepts & importance of **Family Medicine**
Biomedical Ethics
Research.

Skill:

1. Describe the gross anatomy of mediastinum along with clear understanding of structures present in it.
2. Correlate between histological structure of respiratory membrane and its role in diffusion of gases.

Attitude:

1. Demonstrate a professional attitude, team building spirit and good communication skills.

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning
- Methodologies/Strategies
 - Large Group Interactive Session (LGIS)
 - Small Group Discussion (SGD)
 - Self-Directed Learning (SDL)
 - Case Based Learning (CBL)
 - Problem- Based Learning (PBL)
 - Skill Labs/Practicals (SKL)

Tables & Figures

- Table1. Domains of learning according to Blooms Taxonomy
- Figure 1. Prof Umar's Model of Integrated Lecture
- Table2. Standardization of teaching content in Small Group Discussions
- Table 3. Steps of taking Small Group Discussions
- Figure 2. PBL 7 Jumps Model

Table1. Domains of Learning According to Blooms Taxonomy

Sr. #	Abbreviation	Domains of learning
1.	C	Cognitive Domain: knowledge and mental skills.
	• C1	Remembering
	• C2	Understanding
	• C3	Applying
	• C4	Analyzing
	• C5	Evaluating
	• C6	Creating
2.	P	Psychomotor Domain: motor skills.
	• P1	Imitation
	• P2	Manipulation
	• P3	Precision
	• P4	Articulation
	• P5	Naturalization
3.	A	Affective Domain: feelings, values, dispositions, attitudes, etc
	• A1	Receive
	• A2	Respond
	• A3	Value
	• A4	Organize
	• A5	Internalize

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

The large group interactive session is structured format of Prof Umar Model of Integrated lecture. It will be followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explain the underlying phenomena through questions, pictures, videos of patients, interviews and exercises, etc. Students are actively involved in the learning process.

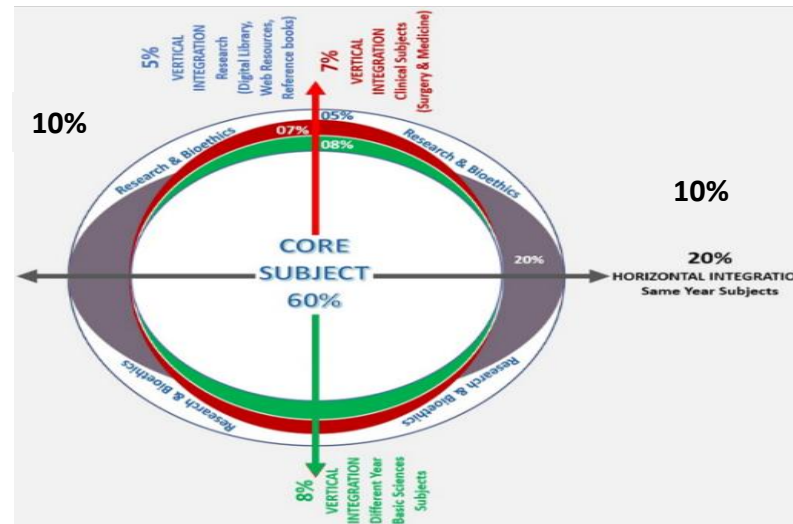


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

This format helps students to clarify concepts acquire skills and attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics or power point presentations. Students exchange opinions and apply knowledge gained from lectures, SGDs and self-study. The facilitator role is to ask probing questions, summarize and help to clarify the concepts.

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementation of Small Group Discussions

Step 1	Sharing of Learning objectives by using students Study guides	First 5 minutes
Step 2	Asking students pre-planned questions from previous teaching session to develop co-relation (these questions will be standardized)	5minutes
Step 3	Students divided into groups of three and allocation of learning objectives	5minutes
Step 4	ACTIVITY: Students will discuss the learning objectives among themselves	15 minutes
Step 5	Each group of students will present its learning objectives	20 min
Step 6	Discussion of learning content in the main group	30min
Step 7	Clarification of concept by the facilitator by asking structured questions from learning content	15 min
Step 8	Questions on core concepts	
Step 9	Questions on horizontal integration	
Step 10	Questions on vertical integration	
Step 11	Questions on related research article	
Step 12	Questions on related ethics content	
Step 13	Students Assessment on online MS teams (5 MCQs)	5 min
Step 14	Summarization of main points by the facilitator	5 min
Step 15	Students feedback on the SGD and entry into log book	5 min
Step 16	Ending remarks	

Self-Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be defined
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:
 - i Will be online on LMS (Mid module/ end of Module)
 - ii.OSPE station

Case Based Learning (CBL)

- It's a learner centered model which engages students in discussion of specific scenarios that typically resemble real world examples.
- Case scenario will be given to the students
- Will engage students in discussion of specific scenarios that resemble or typically are real-world examples.
- Learning objectives will be given to the students and will be based on
 - i. To provide students with a relevant opportunity to see theory in practice
 - ii. Require students to analyze data in order to reach a conclusion.
 - iii. Develop analytic, communicative, and collaborative skills along with content knowledge.

Problem Based Learning (PBL)

- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.
- This problem is what drives the motivation and the learning.

The 7- Jump-Format of PBL (Masstricht Medical School)	
Step 7	Synthesize & Report
Step 6	Collect Information from outside
Step 5	Generate learning Issues
Step 4	Discuss and Organize Ideas
Step 3	Brainstorming to Identify Explanations
Step 2	Define the Problem
Step 1	Clarify the Terms and Concepts of the Problem Scenario
	Problem- Scenario

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide	10-15 minutes
Practical work	25-30 minutes
Write/ draw and get it checked by teacher	20-25 minutes
05 mcqs at the end of the practical	10 minutes
At the end of module practical copy will be signed by head of department	
At the end of block the practical copy will be signed by	
Head of Department	
Dean	
Medical education department	
QEC	

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- Large Group Interactive Session:
 - Anatomy (LGIS)
 - Physiology (LGIS)
 - Biochemistry (LGIS)
- Small Group Discussions
 - Anatomy (SGD)
 - Physiology (SGD)
 - Biochemistry (SGD)
- Self-Directed Topic, Learning Objectives & References
 - Anatomy (SDL)
 - Physiology (SDL)
 - Biochemistry (SDL)
- Skill Laboratory
 - Anatomy
 - Physiology
 - Biochemistry

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Respiratory system I (Histology)	• Explain division of the respiratory system	C2	LGIS	MCQ SAQ VIVA
	• Describe different functions of respiratory system.	C2		
	• Describe details of respiratory epithelium	C2		
	• Discuss microscopic structure of vestibule	C2		
	• Describe structural specialization in mucosa of nasal cavity proper	C2		
	• Appreciate differences between respiratory mucosa and olfactory mucosa	C1		
	• Describe the features of olfactory mucosa	C2		
	• Describe related Clinical	C3		
	• Read relevant research articles	C3		
• Use HEC digital library	C3			
Respiratory system II (Histology)	• Describe microscopic structure of paranasal sinuses	C2	LGIS	MCQ SAQ VIVA
	• Describe general histological organization of respiratory system	C2		
	• Appreciate different histological layers of nasopharynx	C1		
	• Describe histological structure of laryngeal cartilages	C2		
	• Discuss components of tracheal wall	C2		
	• Read relevant research articles	C3		
• Use HEC digital library	C3			
Histology of Respiratory System III	• Describe division of bronchial tree	C2	LGIS	MCQ SAQ VIVA
	• Discuss microscopic structure of extra and intra pulmonary bronchi	C2		
	• Describe histological structure of bronchioles	C2		
	• Appreciate differences between bronchi and bronchioles Discuss microscopic structure of terminal bronchioles	C1		
	• Appreciate the significance of Clara cells with their functions	C2		
	• Discuss other cells present in terminal bronchioles	C2		
	• Describe the microscopic structure of respiratory bronchioles	C2		
	• Describe differences between respiratory and terminal bronchioles Describe characteristics of alveolar ducts	C2		

	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Histology of Respiratory System IV	• Describe histological structure of alveolar ducts and their functions	C2	LGIS	MCQ SAQ VIVA
	• Identify type 1 and type II alveolar cells	C1		
	• Describe histological structure of interalveolar septum	C2		
	• Discuss role of alveolar macrophages	C2		
	• Describe Blood – Air barrier in detail	C2		
	• Discuss histology of pleura in detail	C2		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Development of Respiratory System (Nose and Paranasal sinuses)	• Describe role of pharyngeal arches in development of nose	C2	LGIS	MCQ SAQ VIVA
	• Describe development of nose and paranasal sinuses	C2		
	Describe the Congenital anomalies of nose and paranasal sinuses	C2		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Development of Respiratory System (Larynx & Trachea)	• Describe formation of respiratory primordium	C2	LGIS	MCQ SAQ VIVA
	• Describe the role of pharyngeal arches in development of larynx	C2		
	• Discuss formation of laryngotracheal diverticulum	C2		
	• Describe formation of trachea esophageal septum and its importance	C2		
	• Describe Congenital defects associated with development of Trachea	C3		
	• Describe formation and division of respiratory buds	C2		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Development of Respiratory System (Lungs)	• Discuss development of bronchi and bronchopulmonary segments	C2	LGIS	MCQ SAQ VIVA
	• Describe development of pleural cavities	C2		
	• Discuss process of maturation of lungs	C2		
	• Enlist different stages of lung maturation	C1		
	• Explain the production and significance of Surfactant	C2		
	• Describe role of fetal breathing movements in maturation of lungs	C2		
	• Discuss postnatal development of lungs	C2		
	• Describe congenital anomalies associated with lungs	C3		
	• Read relevant research articles	C3		

	• Use HEC digital library	C3		
Development of Respiratory System (Diaphragm)	• Describe the development of diaphragm	C2	LGIS	MCQ SAQ VIVA
	• Elaborate formation of septum transversum and its role in development of diaphragm	C2		
	• Discuss congenital defects associated with diaphragm	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		

Physiology Large Group Interactive Session (LGIS)

Topics	Learning Objectives	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Mechanics of pulmonary ventilation, Lung compliance	<ul style="list-style-type: none"> Enumerate muscles of inspiration and expiration and Describe mechanics of pulmonary ventilation Describe surfactant, surface tension and collapse of alveoli Define compliance. Draw compliance diagram of lungs. Explain relationship of surface tension, radius of alveoli, elastic forces of lungs with compliance 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 621,629) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 569) Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 189,197) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 36,Page 581) ,(Chapter 40,Page 629) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 491,493) 	<ol style="list-style-type: none"> https://www.ncbi.nlm.nih.gov/books/NBK538324/ https://youtu.be/TwgmMfqOW4 	C1 C1 C1 C1 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Pulmonary circulation & Pulmonary capillary dynamics. Physical principles of gas exchange & diffusion through respiratory membrane	<ul style="list-style-type: none"> Discuss the role of alveoli and pleural space in respiration and pressure changes during respiration Enlist non-respiratory and respiratory functions of respiration Define and explain the concept of respiratory membrane. Define and draw respiratory unit Draw a diagram showing the exchange of gases through the 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 626,633,635) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 574) Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 209) 	<ol style="list-style-type: none"> https://youtu.be/aJPwUnZtycQ https://youtu.be/zv1fDFn8BaM https://pressbooks-dev.oer.hawaii.edu/biology/chapter/gas-exchange- 	C2 C1 C1 C1 C1 C1 C1 C1 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

	<p>respiratory membrane</p> <ul style="list-style-type: none"> • Enlist four factors affecting the rate of gas diffusion through the respiratory membrane • Define diffusing capacity of respiratory membrane. • Describe the diffusing capacity for oxygen. • Describe the diffusing capacity for carbon dioxide. • Describe the changes in diffusing capacity of oxygen and carbon dioxide during exercise • Compare the diffusing capacities of oxygen and carbon dioxide 	<ul style="list-style-type: none"> • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 37,Page 592) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 39, Page 503) (Chapter 40, Page 511,515) 	<p>across-respiratory-surfaces/ 4. https://www.sciencedirect.com/science/article/pii/S2666496822000194.</p>			
Pulmonary volumes, capacities & functions of respiratory tract	<ul style="list-style-type: none"> • Define lung volumes and capacities. • Define the four pulmonary volumes and capacities. • Enlist normal values of all the lung volumes and capacities • Draw a graph representing all the lung volumes and capacities. • Describe how lung volumes and capacities can be measured with spirometer. • Enlist the lung volumes and capacities which can't be measured by spirometer 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 628) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 578) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 191) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 495) 	<ol style="list-style-type: none"> 1. https://youtu.be/9VdHhD1vcDU 2. https://teachmephysiology.com/respiratory-system/ventilation/lung-volumes/ 	C1 C1 C1 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Transport of oxygen	Describe in detail the transport of oxygen from lungs to tissues	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 639) 	<ol style="list-style-type: none"> 1. https://teachmephysiology.com/respiratory-system/gas-exchange/oxygen-transport/ 2. https://youtu.be/HU6 	C1	LGIS	MCQ SEQ VIVA VOCE

		<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Gas Exchange and Transport (Chapter 18, Page 599) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5, Page 210, 213, 216) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 05, (Chapter 38, Page 603) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. (Chapter 41, Page 521) 	LQldvog			MCQ (LMS based Assessment, MST based Assessment) OSPE
Ventilation perfusion ratio	<ul style="list-style-type: none"> • Define And Explain importance. • Draw ventilation perfusion diagram Explain the concept of physiologic shunt and dead space 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology. 25TH Edition. Section 06, Respiratory Physiology (Chapter 34, Page 636) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Mechanics of Breathing (Chapter 17, Page 587) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5, Page 194, 225, 229) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 05, (Chapter 39, Page 612) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. (Chapter 38, Page 497) 	<ol style="list-style-type: none"> 1. https://youtu.be/UKsOLb5XWa0 2. https://teachmephysiology.com/respiratory-system/gas-exchange/ventilation-perfusion/ 	C1/C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Oxygen hemoglobin dissociation curve	Describe the role of hemoglobin in oxygen transport. Draw oxy-hemoglobin dissociation curve.	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology. 25TH Edition. Section 06, 	<ol style="list-style-type: none"> 1. https://www.science-direct.com/topics/nursing-and-health- 	C1 C1 C1	LGIS	MCQ SEQ

	<p>Enlist and explain factors which shift the curve towards right and left. Briefly explain the transport of oxygen in plasma</p>	<p>Respiratory Physiology (Chapter 35, Page 639-641)</p> <ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Gas Exchange and Transport (Chapter 18, Page 608) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5, Page 218) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. (Chapter 41, Page 524) 	<p>professions/oxygen-dissociation-curve</p> <p>2. https://youtu.be/MUKkv1rbOIM</p>	C2		VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Lung function test	<ul style="list-style-type: none"> • Describe all the non-invasive & invasive tests to assess the pulmonary functions 	<ul style="list-style-type: none"> • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Mechanics of Breathing (Chapter 17, Page 592) • Textbook of Medical Physiology by Guyton & Hall. 14th Edition. (Chapter 44, Page 553) 	<p>1. https://www.webmd.com/lung/types-of-lung-function-tests</p> <p>2. https://youtu.be/6dHVhEjzj64</p>	C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Transport of CO ₂	<p>Enumerate and explain the various transport forms of carbondioxide in blood. Also state percentages of all these forms Explain the carbondioxide dissociation curve Define respiratory exchange ratio. Describe haldanes effect ,bohr effect and chloride shift</p>	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology. 25TH Edition. Section 06, Respiratory Physiology (Chapter 35, Page 641) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5, Page 223) 	<p>1. https://courses.lumenlearning.com/wm-biology2/chapter/transport-of-carbon-dioxide-in-the-blood/</p> <p>2. https://youtu.be/VgpNSdWvrno</p>	C1 C2 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment)

		<ul style="list-style-type: none"> • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 05,(Chapter 38,Page 606) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 41, Page 528) 				OSPE
Respiratory abnormalities (COPD, Tuberculosis, Pneumonia, Atelectasis)	<ul style="list-style-type: none"> • Explain the physiologic peculiarities of chronic pulmonary emphysema, pneumonia, atelectasis, asthma and tuberculosis 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 36, Page 664) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 43, Page 541) 	<ol style="list-style-type: none"> 1. https://www.physio-pedia.com/Respiratory_Disorders 2. https://youtu.be/SrKfsCdeqWc 3. https://youtu.be/h0p7bs5xdgQ 	4. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Nervous regulation of respiration	<ul style="list-style-type: none"> • Describe term respiratory center. • Enumerate the various respiratory centers. • Give the anatomical location of respiratory centers 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 36, Page 655) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Gas Exchange and Transport (Chapter 18, Page 614) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 231) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05(Chapter 41,Page 646) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 42, Page 531) 	<ol style="list-style-type: none"> 1. https://youtu.be/KNAKKNbq20 2. https://teachmephysiology.com/respiratory-system/regulation/neural-control-ventilation/ 	<ol style="list-style-type: none"> 3. C1 4. C1 5. C1 	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Hypoxia, hypercapnia, cyanosis	<ul style="list-style-type: none"> Define hypoxia and hypercapnia. Enumerate and explain its various types. Enumerate the roles of oxygen therapy in different types of hypoxia 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology. 25TH Edition. Section 06, Respiratory Physiology (Chapter 35, Page 646,650) Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5, Page 239) Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 05,, (Chapter 41, Page 653) (Chapter 42, Page 662) Textbook of Medical Physiology by Guyton & Hall. 14th Edition. (Chapter 43, Page 546) 	<ol style="list-style-type: none"> https://youtu.be/wtn--qgs3Fg https://www.verywellhealth.com/hypoxia-types-symptoms-and-causes-2248929 	<ol style="list-style-type: none"> C1 C1 	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Chemical regulation of respiration & exercise changes	<ul style="list-style-type: none"> Describe in detail the role of respiratory centers in the regulation of respiration. Explain chemical control of respiration in detail Describe changes in respiration during exercise. Enumerate and briefly explain factors which affect respiration. Describe briefly the mechanism of periodic breathing and sleep apnea 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology. 25TH Edition. Section 06, Respiratory Physiology (Chapter 36, Page 657,664) Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5, Page 233,235) Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 05, (Chapter 41, Page 649) Textbook of Medical Physiology by Guyton & Hall. 14th Edition. (Chapter 42, Page 533,536) 	<ol style="list-style-type: none"> https://youtu.be/gR_RLgo9Vn0 https://journals.physiology.org/doi/abs/10.1152/physrev.1925.5.4.551?journalCode=physrev 	<ol style="list-style-type: none"> C1 C2 C1 C1 	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Space physiology	<ul style="list-style-type: none"> Define and explain the process of acclimatization to low oxygen tension Describe acute and chronic mountain sickness 	<ul style="list-style-type: none"> Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 42, Page 659,663) 	<ol style="list-style-type: none"> https://youtu.be/NFfHh_rQZJE https://www.physoc.org/careers/res 	<ol style="list-style-type: none"> C1 C1 C1 	LGIS	MCQ SEQ VIVA VOCE

	<ul style="list-style-type: none"> Describe the effects of acceleratory forces on body in aviation and space physiology 	<ul style="list-style-type: none"> Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553) 	earch/space-physiology/			<p>MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
Miscellaneous factors affecting respiration (concept of voluntary control of respiration, lung J receptor, brain edema, anesthesia, chyne stokes breathing, sleep apnea)	<ul style="list-style-type: none"> Describe in detail the role of respiratory centers in the regulation of respiration. Explain chemical control of respiration in detail Describe changes in respiration during exercise. Enumerate and briefly explain factors which affect respiration. Describe briefly the mechanism of periodic breathing and sleep apnea 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 36, Page 662) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 41,Page 656) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 42, Page 538) 	<ol style="list-style-type: none"> https://www.physoc.org/careers/research/space-physiology/ https://www.brainkart.com/article/Factors-Affecting-Respiration_16533/ 		LGIS	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
High altitude physiology	<ul style="list-style-type: none"> Describe the effects of low oxygen pressure on body Enumerate the acute effects of hypoxia on body Define and explain the process of acclimatization to low oxygen tension Describe acute and chronic mountain sickness Describe the effects of acceleratory forces on body in aviation and space physiology 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 648) Physiology by Linda S. Costanzo 6th Edition.Respiratory Physiology (Chapter 5,Page 237) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 42,Page 659) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553,556,559) 	<ol style="list-style-type: none"> https://youtu.be/6KHQGS4jJyI https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2151873/ 	<ol style="list-style-type: none"> C1 C1 C1 C1 	LGIS	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>

Deep sea physiology	<ul style="list-style-type: none"> • Discuss Effect of high partial pressure of individual gasses on the body • Discuss Oxygen toxicity at high pressure Carbon dioxide toxicity at high pressure Explain in detail the process of decompression in deep sea divers 	<ul style="list-style-type: none"> • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 42, page 665) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553) 	<ol style="list-style-type: none"> 1. https://medicoapps.org/m-physiology-of-deep-sea-diving/ 2. https://youtu.be/eNMkPam9aU 	<ol style="list-style-type: none"> 3. C2 4. C2 	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
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Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
PH And PKA	• Define of pH and pKa	C1	LGIS	MCQs SAQs Viva
	• Elaborate Henderson Hasselbalch equation.	C2		
	• Describe Measurement of pH by equation.	C2		
Body buffers	• Define buffers.	C1	LGIS	MCQs SAQs Viva
	• Discuss Mechanism of various buffers in maintenance of blood pH.	C2		
Electron transport chain	• Describe Components/ complexes of electron transport chain.	C2	LGIS	MCQs SAQs Viva
	• Enlist Enzymes and Co-enzymes of each component.	C1		
	• Enlist Inhibitors of these complexes.	C1		
Mechanisms of energy generation in the body.	• Discuss various mechanisms of energy generation in the body.	C2	LGIS	MCQs SAQs Viva
	• Discuss Oxidative phosphorylation.	C2		
	• Describe uncouplers.	C2		
Energy change.	• Define the terms: <ul style="list-style-type: none"> ○ Free energy change. ○ Standard free energy. 	C1	LGIS	MCQs SAQs Viva
	• Describe various sources of electrons.	C2		
	• Define Vitamins	C1		MCQs

Vitamins	<ul style="list-style-type: none"> • Discuss the distribution, daily requirement and deficiency of vitamins • Clinical indication of vitamins 	C2 C2	LGIS	SAQs Viva
Xenobiotics	<ul style="list-style-type: none"> • Define xenobiotics • Discuss its metabolism and its role in environment 	C1 C2	LGIS	MCQs SAQs Viva

Anatomy Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Nose & Paranasal Sinuses	• Describe anatomy of nasal cavity	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Describe the blood supply and the site of anastomosis in the nose.	C2		
	• Discuss the nerve supply of nose	C2		
	• Discuss the applied and the related clinical.	C3		
	• Define and enumerate para nasal sinuses.	C1		
	• Discuss the shape, location and their point of openings.	C2		
	• Clinical significance with surgical interventions.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Larynx & Trachea	• Enumerate the components of larynx	C1	Skill Lab	MCQ SAQ Viva OSPE
	• Describe paired and unpaired cartilages of larynx Describe Intrinsic and extrinsic muscles of larynx (origin, insertion nerve supply and action).	C2		
	• Describe Intrinsic and extrinsic membrane (attachments and structure piercing the membranes).	C2		
	• Discuss the movements of vocal cords and their effects on the voice and respiration.	C2		
	• Discuss the blood supply and nerve supply of larynx.	C2		
	• Discuss the applied and the related clinical.	C3		
	• Describe the level of commencement of trachea, its termination and the tracheal cartilages.	C2		
	• State the level of division of trachea	C1		
	• Describe in detail the nerve supply and blood supply of trachea.	C2		
	• Discuss the applied and the related clinicals.	C3		

	<ul style="list-style-type: none"> • Read relevant research articles 	C3		
	<ul style="list-style-type: none"> • Use HEC digital library 	C3		
Overview of Thoracic wall	<ul style="list-style-type: none"> • Enumerate the bones of the thorax. 	C1	Skill Lab	MCQ SAQ Viva OSPE
	<ul style="list-style-type: none"> • Describe and classify the typical ribs (side determination, features, attachments, relations, types and ossification). 	C2		
	<ul style="list-style-type: none"> • Discuss the applied and the related clinical. 	C3		
	<ul style="list-style-type: none"> • Read relevant research articles 	C3		
	<ul style="list-style-type: none"> • Use HEC digital library 	C3		
Skeleton of thoracic wall (Ribs)	<ul style="list-style-type: none"> • Describe and classify the atypical ribs (side determination, features, attachments, relations, types and ossification). 	C2	Skill Lab	MCQ SAQ Viva OSPE
	<ul style="list-style-type: none"> • Differentiate between typical and atypical ribs. 	C2		
	<ul style="list-style-type: none"> • Discuss costal cartilages and their attachments. 	C2		
	<ul style="list-style-type: none"> • Discuss the applied and the related clinicals. 	C3		
	<ul style="list-style-type: none"> • Read relevant research articles 	C3		
Skeleton of thoracic wall (Sternum)	<ul style="list-style-type: none"> • Identify different parts of sternum. 	C1	Skill Lab	MCQ SAQ Viva OSPE
	<ul style="list-style-type: none"> • Describe the bony features, attachments ossification of sternum 	C2		
	<ul style="list-style-type: none"> • Discuss the related applied and clinicals. 	C3		
	<ul style="list-style-type: none"> • Read relevant research articles 	C3		
	<ul style="list-style-type: none"> • Use HEC digital library 	C3		
Joints of thoracic wall	<ul style="list-style-type: none"> • Classify the joints of the thorax. 	C2	Skill Lab	MCQ SAQ Viva OSPE
	<ul style="list-style-type: none"> • Discuss the type, ligaments and relations of the joints of the thorax (Manubriosternal, xiphisternal, costovertebral, costotransverse, costochondral, chondrosternal, interchondral and intervertebral joints). 	C2		
	<ul style="list-style-type: none"> • Discuss the components functions of the intervertebral disc. 	C2		
	<ul style="list-style-type: none"> • Discuss the related applied and clinicals. 	C3		
	<ul style="list-style-type: none"> • Read relevant research articles 	C3		
Thoracic apertures	<ul style="list-style-type: none"> • Discuss the boundaries, shape and structure passing through superior thoracic aperture (viscera, blood vessels, nerve and muscles) 	C2	Skill Lab	MCQ SAQ Viva OSPE
	<ul style="list-style-type: none"> • Describe the thoracic inlet syndrome. 	C3		
	<ul style="list-style-type: none"> • Discuss the boundaries, shape and structures passing through the inferior thoracic aperture. 	C2		
	<ul style="list-style-type: none"> • Read relevant research articles 	C3		

	<ul style="list-style-type: none"> • Use HEC digital library 	C3		
Intercostal spaces /	<ul style="list-style-type: none"> • Discuss the thoracic wall. 	C2	Skill Lab	MCQ SAQ Viva OSPE
	<ul style="list-style-type: none"> • Describe the intercostals muscles (origin, insertion, direction of fibers, nerve supply and actions). 	C2		
Movements of thoracic wall	<ul style="list-style-type: none"> • Discuss in detail the formation, branches, distribution and the related clinical of the intercostals nerves. 	C3		
	<ul style="list-style-type: none"> • Explain the formation, course, relations, distribution and branches of the thoracic sympathetic trunk. 	C2		
	<ul style="list-style-type: none"> • Differentiate between the typical and atypical intercostals space. 	C1		
	<ul style="list-style-type: none"> • Compare the typical and atypical intercostals space. 	C2		
	<ul style="list-style-type: none"> • Describe the types and axis of movements of vertebral column (flexion, extension, lateral flexion and rotation). 	C2		
	<ul style="list-style-type: none"> • Define the respiratory movements on the basis of principles, factors and the different types (pump handle, bucket handle and piston). 	C1		
	<ul style="list-style-type: none"> • Discuss the related physiological and pathological changes occurring (related to age movement etc). 	C2		
	<ul style="list-style-type: none"> • Read relevant research articles 	C3		
	<ul style="list-style-type: none"> • Use HEC digital library 	C3		
	Diaphragm	<ul style="list-style-type: none"> • Describe the small and large openings in the diaphragm (vertebral level, location, formation, structures passing through and effects on the openings and structures by the diaphragmatic contraction). 	C2	Skill Lab	MCQ SAQ Viva OSPE
<ul style="list-style-type: none"> • Discuss related clinical aspects 		C3		
<ul style="list-style-type: none"> • Read relevant research articles 		C3		
<ul style="list-style-type: none"> • Use HEC digital library 		C3		
Vessels and lymphatics of thoracic wall	<ul style="list-style-type: none"> • Explain the arterial supply of intercostals space (anterior / posterior, parent vessels, branches, course, relations and termination). 	C2	Skill Lab	MCQ SAQ Viva OSPE
	<ul style="list-style-type: none"> • Differentiate between the arterial supply of typical and atypical intercostal space with the related clinicals. 	C3		
	<ul style="list-style-type: none"> • Explain the venous drainage of the inercostal spaces (anterior / posterior, parent vessels, tributaries, course, relations and termination). 	C2		
	<ul style="list-style-type: none"> • Differentiate between the venous drainage of typical and atypical intercostal space with the related clinicals 	C3		
	<ul style="list-style-type: none"> • Read relevant research articles 	C3		
	<ul style="list-style-type: none"> • Use HEC digital library 	C3		

Innervation of Thoracic Wall	• Discuss the origin of intercostal nerves.	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Discuss course of nerves.	C2		
	• Discuss branches and related area supplied by these	C2		
	• Discuss related clinical	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Pleura	• Discuss visceral and parietal pleura	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Discuss the pleural recesses and pleural cavity.	C2		
	• Describe the nerve and blood supply of pleura.	C2		
	• Discuss the applied and the related clinicals.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Lungs	• Identify the features of right and left lung.	C1	Skill Lab	MCQ SAQ Viva OSPE
	• Discuss the bronchopulmonary segments and their clinical significance	C3		
	• Discuss and differentiate between the root of lung and the hilum of lung.	C2		
	• Describe the nerve plexuses related to the lungs.	C2		
	• Explain the blood supply of lungs	C2		
	• Discuss the applied and the related clinicals.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Surface Marking	• Identify heart borders	P1	Skill Lab	MCQ SAQ Viva OSPE
	• aortic knuckle,	P1		
	• costophrenic angles,	P1		
	• cardio phrenic angles,	P1		
	• domes of diaphragm,	P1		
	• counting of ribs	P1		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		

Physiology Small Group Discussion (SGDs)

Topics	Learning Objectives	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Physiology of unusual environment	<ul style="list-style-type: none"> Define and explain the process of acclimatization to low oxygen tension Describe acute and chronic mountain sickness Describe the effects of acceleratory forces on body in aviation and space physiology 	<ul style="list-style-type: none"> Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.(Chapter 42,Page 659,663) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553) 	<ol style="list-style-type: none"> https://youtu.be/NFfHh_rQZJE https://www.physoc.org/careers/research/space-physiology/ 	C1 C1 C1	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Mechanics of pulmonary ventilation & compliance (Second week)	<ul style="list-style-type: none"> Enumerate muscles of inspiration and expiration and Describe mechanics of pulmonary ventilation Describe surfactant, surface tension and collapse of alveoli Define compliance. Draw compliance diagram of lungs. Explain relationship of surface tension, radius of alveoli, elastic forces of lungs with compliance 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 621,629) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 569) Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 189,197) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 36,Page 581) ,(Chapter 40,Page 629) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 491,493) 	<ul style="list-style-type: none"> https://www.ncbi.nlm.nih.gov/books/NBK538324/ https://youtu.be/BTWgmMfqOW4 	C1 C1 C1 C1 C1 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

<p>Ventilation perfusion ratio & regulation of respiration (Second week)</p>	<ul style="list-style-type: none"> • Define And Explain importance. • Draw ventilation perfusion diagram Explain the concept of physiologic shunt and dead space 	<ul style="list-style-type: none"> • Ganong’s Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 34, Page 636) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Mechanics of Breathing (Chapter 17, Page 587) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 194,225,229) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition.Section 05,(Chapter 39,Page 612) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 497) 	<ul style="list-style-type: none"> • https://youtu.be/UKsOLb5XWa0 • https://teachmephysiology.com/respiratory-system/gas-exchange/ventilation-perfusion/ 	<p>1. C1/C2 2. C1</p>	<p>SGD</p>	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE</p>
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Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Body buffers	• Define buffers.	C1	SGD	MCQs SAQs Viva
	• Discuss Mechanism of various buffers in maintenance of blood PH.	C2		
Electron transport chain	• Enlist Components/ complexes of electron transport chain.	C1	SGD	MCQs SAQs Viva
	• Describe Enzymes and Co-enzymes of each component.	C2		
	• Discuss Inhibitors of these complexes.	C2		
Mechanisms of energy generation in the body.	• Describe various mechanisms of energy generation in the body.	C2	SGD	MCQs SAQs Viva
	• Discuss Oxidative Phosphorylation.	C2		
	• Describe uncouplers of ETC.	C2		
Vitamin	<ul style="list-style-type: none"> • Define Vitamins • Discuss the distribution, daily requirement and deficiency of vitamins • Clinical indication of vitamins 	C1 C2 C2	SGD	MCQs SAQs Viva

Anatomy Self-Directed Learning (SDL)

Topics Of SDL	Learning Objective	References
Nose, paranasal sinuses, larynx, and trachea	<ul style="list-style-type: none"> • Describe anatomy of nasal cavity 	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 395, 396, 973, 974, 978, 979) https://youtu.be/UPrY8JqXYCc https://youtu.be/IDBYF2i9vqU https://www.ncbi.nlm.nih.gov/books/NBK513272/
	<ul style="list-style-type: none"> • Describe the blood supply and the site of anastomosis in the nose. 	
	<ul style="list-style-type: none"> • Discuss the nerve supply of nose 	
	<ul style="list-style-type: none"> • Discuss the applied and the related clinical. 	
	<ul style="list-style-type: none"> • Define and enumerate para nasal sinuses. 	
	<ul style="list-style-type: none"> • Discuss the shape, location and their point of openings. 	
	<ul style="list-style-type: none"> • Clinical significance with surgical interventions. 	
	<ul style="list-style-type: none"> • Enumerate the components of larynx 	
	<ul style="list-style-type: none"> • Describe paired and unpaired cartilages of larynx Describe Intrinsic and extrinsic muscles of larynx (origin, insertion nerve supply and action). 	
	<ul style="list-style-type: none"> • Describe Intrinsic and extrinsic membrane (attachments and structure piercing the membranes). 	
	<ul style="list-style-type: none"> • Discuss the movements of vocal cords and their effects on the voice and respiration. 	
	<ul style="list-style-type: none"> • Discuss the blood supply and nerve supply of larynx. 	
	<ul style="list-style-type: none"> • Discuss the applied and the related clinical. 	
	<ul style="list-style-type: none"> • Describe the level of commencement of trachea, its termination and the tracheal cartilages. 	
<ul style="list-style-type: none"> • State the level of division of trachea 		
<ul style="list-style-type: none"> • Describe in detail the nerve supply and blood supply of trachea. 		
<ul style="list-style-type: none"> • Discuss the applied and the related clinicals. 		
Skeleton of thoracic wall	<ul style="list-style-type: none"> • Describe and classify the atypical ribs (side determination, features, attachments, relations, types and ossification. 	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 299). https://youtu.be/PoA-Uq9w-7s https://www.ncbi.nlm.nih.gov/books/NBK557710/
	<ul style="list-style-type: none"> • Differentiate between typical and atypical ribs. 	

	<ul style="list-style-type: none"> • Discuss costal cartilages and their attachments. • Discuss the applied and the related clinicals. • Identify different parts of sternum. • Describe the bony features, attachments ossification of sternum • Discuss the related applied and clinicals. 	
Movements of thoracic wall and Intercostal spaces	<ul style="list-style-type: none"> • Discuss the thoracic wall. • Describe the intercostals muscles (origin, insertion, direction of fibers, nerve supply and actions. • Discuss in detail the formation, branches, distribution and the related clinical of the intercostals nerves. • Explain the formation, course, relations, distribution and branches of the thoracic sympathetic trunk. • Differentiate between the typical and atypical intercostals space. • Compare the typical and atypical intercostals space. • Describe the types and axis of movements of vertebral column (flexion, extension, lateral flexion and rotation). • Define the respiratory movements on the basis of principles, factors and the different types (pump handle, bucket handle and piston). • Discuss the related physiological and pathological changes occurring (related to age movement etc). 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 306, 307, 308). https://youtu.be/NwDxbNqEVaA https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4534848/</p>
Anatomy of diaphragm	<ul style="list-style-type: none"> • Describe the small and large openings in the diaphragm (vertebral level, location, formation, structures passing through and effects on the openings and structures by the diaphragmatic contraction). • Discuss related clinical aspects 	<p>Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 297, 313, 314, 391, 396, 397, 412, 455, 457, 521, 523). https://youtu.be/6IK-YHK1ToM https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5184786/</p>

Pleura	<ul style="list-style-type: none"> • Discuss visceral and parietal pleura 	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 333, 334, 335, 336). https://youtu.be/66PR3IYWb0A https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4332049/
	<ul style="list-style-type: none"> • Discuss the pleural recesses and pleural cavity. 	
	<ul style="list-style-type: none"> • Describe the nerve and blood supply of pleura. 	
	<ul style="list-style-type: none"> • Discuss the applied and the related clinicals. 	
Lungs	<ul style="list-style-type: none"> • Identify the features of right and left lung. 	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 337-347). https://youtu.be/66PR3IYWb0A https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4332049/
	<ul style="list-style-type: none"> • Discuss the bronchopulmonary segments and their clinical significance 	
	<ul style="list-style-type: none"> • Discuss and differentiate between the root of lung and the hilum of lung. 	
	<ul style="list-style-type: none"> • Describe the nerve plexuses related to the lungs. 	
	<ul style="list-style-type: none"> • Explain the blood supply of lungs 	

Physiology Self-Directed Learning (SDL)

Topics Of SDL	Learning Objective	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Mechanics of pulmonary ventilation, Lung compliance	<ul style="list-style-type: none"> • Enumerate muscles of inspiration and expiration and • Describe mechanics of pulmonary ventilation • Describe surfactant, surface tension and collapse of alveoli • Define compliance. • Draw compliance diagram of lungs. <ol style="list-style-type: none"> 1. Explain relationship of surface tension, radius of alveoli, elastic forces of lungs with compliance 	<ul style="list-style-type: none"> • Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 621,629) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 569) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 189,197) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 36,Page 581) ,(Chapter 40,Page 629) 	<ol style="list-style-type: none"> 1. https://www.ncbi.nlm.nih.gov/books/NBK538324/ 2. https://youtu.be/BTwgmMfqOW4 	C1 C1 C1 C1 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation

		<ul style="list-style-type: none"> Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 491,493) 				
	❖					
Pulmonary circulation & Pulmonary capillary dynamics. Physical principles of gas exchange & diffusion through respiratory membrane	<ul style="list-style-type: none"> Discuss the role of alveoli and pleural space in respiration and pressure changes during respiration Enlist non-respiratory and respiratory functions of respiration Define and explain the concept of respiratory membrane. Define and draw respiratory unit Draw a diagram showing the exchange of gases through the respiratory membrane Enlist four factors affecting the rate of gas diffusion through the respiratory membrane Define diffusing capacity of respiratory membrane. Describe the diffusing capacity for oxygen. Describe the diffusing capacity for carbon dioxide. Describe the changes in diffusing capacity of oxygen and carbon dioxide during exercise <ol style="list-style-type: none"> Compare the diffusing capacities of oxygen and carbon dioxide 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 626,633,635) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 574) Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 209) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 37,Page 592) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 39, Page 503) (Chapter 40, Page 511,515) 	<ol style="list-style-type: none"> https://youtu.be/aJPwUnZtycQ https://youtu.be/zv1fDFn8BaM https://pressbooks-dev.oer.hawaii.edu/biology/chapter/gas-exchange-across-respiratory-surfaces/ https://www.sciencedirect.com/science/article/pii/S2666496822000194. 	C2 C1 C1 C1 C1 C1 C1 C1 C1 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation
Pulmonary volumes, capacities &	<ul style="list-style-type: none"> Define lung volumes and capacities. Define the four pulmonary volumes and capacities. 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 628) 	<ol style="list-style-type: none"> https://youtu.be/9VdHhD1vcDU https://teachmeanatomy.com/physiology 	C1 C1 C1 C1 C1	SDL	MCQ SEQ VIVA VOCE

	<p>briefly explain factors which affect respiration.</p> <ul style="list-style-type: none"> Describe briefly the mechanism of periodic breathing and sleep apnea 	<ul style="list-style-type: none"> Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 41,Page 649) <p>Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 42, Page 533,536)</p>	urnalCode=physrev			<p>MST based Assessment) OSPE SDL Evaluation</p>
<p>Hypoxia, hypercapnia, cyanosis</p>	<ul style="list-style-type: none"> Define hypoxia and hypercapnia. Enumerate and explain its various types. Enumerate the roles of oxygen therapy in different types of hypoxia 	<ul style="list-style-type: none"> Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 646,650) Physiology by Linda S. Costanzo 6th Edition.Respiratory Physiology (Chapter 5,Page 239) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,,(Chapter 41,Page 653) (Chapter 42,Page 662) <p>Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 43, Page 546)</p>	<ol style="list-style-type: none"> https://youtu.be/wtn--qgs3Fg https://www.verywellhealth.com/hypoxia-types-symptoms-and-causes-2248929 	<p>C1 C1</p>	<p>SDL</p>	<p>MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation</p>

Biochemistry Self-Directed Learning (SDL)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
HH equation	• Define of pH and pKa	C1	SDL	MCQs SAQs Viva
	• Elaborate Henderson Hasselbalch equation.	C2		
	• Describe Measurement of pH by equation.	C2		
Role of Chemical Buffers in pH regulation	• Define buffers.	C1	SDL	MCQs SAQs Viva
	• Discuss Mechanism of various buffers in maintenance of blood pH.	C2		
	• Elaborate the carbonic acid-bicarbonate buffer system			
pH meter and physiological buffers in pH regulation	• Measure the pH of solution in Pharmaceutical, Chemical, and Biotechnology Industry	C2	SDL	MCQs SAQs Viva
	• Elaborate the Bicarbonate and Phosphate system of Buffers and intracellular and extracellular proteins	C1		
		C1		
Vitamin Pyridoxine	• Discuss Vitamin B ₆ , used as a dietary supplement	C2	SDL	MCQs SAQs Viva
	• Describe its deficiency and related clinical disorders	C2		
		C2		
Xenobiotics	• Define xenobiotics	C1	SDL	MCQs SAQs Viva
	• Discuss its metabolism and its role in environment	C2		

Histology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Olfactory /Nasal mucosa	• Identify microscopic structure of respiratory and nasal mucosa under microscope.	P1	Skills Lab	OSPE
	• Illustrate histological structures of olfactory / nasal mucosa	C1		
	• Write two points of identification	C1		
	• Relevant research articles	C3		
	• Use HEC digital library	C3		
Epiglottis	• Identify types of cells and epithelium of epiglottis under microscope	P1	Skills Lab	OSPE
	• Illustrate histological structures of epiglottis.	C1		
	• Write two points of identification	C1		
	• Relevant research articles	C3		
	• Use HEC digital library	C3		
Trachea	• Identify microscopic structures of trachea.	P1	Skills Lab	OSPE
	• Illustrate microscopic structure of trachea.	C1		
	• Write two points of identification	C1		
	• Relevant research articles	C3		
	• Use HEC digital library	C3		
Lungs	• Identify microscopic structure of, bronchi, terminal bronchiole, respiratory bronchiole, alveoli, alveolar duct of the respiratory tract on the basis of <ul style="list-style-type: none"> ○ Types of epithelial cells present ○ Relative amount of gland, cartilage, smooth muscles and connective tissue fibers present in wall of the tubes. 	P1	Skill Lab	OSPE
	• Illustrate microscopic structure of different layers of respiratory passages.	C1		
	• Write points of identification of each part	C1		
	• Relevant research articles	C3		
	• Use HEC digital library	C3		

Physiology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives	Reference	Learning Domains	Learning Strategy	Assessment Tools
Measurement of different lung volume & capacities with the help of spirometer	<ul style="list-style-type: none"> • Description of its various parts • Importance of spirometer for measurements of various volumes • Define various lung volumes & capacity • How to measure them 	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	C1/C3 A3 P3	Practicals /skill lab	Viva Voce Ospe Video Assisted Assessment
Recording of normal and modified movement of respiration (Stethography)	<ul style="list-style-type: none"> • Introduction to stethography • How to use it and its clinical importance 	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	C1/C3 A3 P3	Practicals /skill lab	Viva Voce Ospe Video Assisted Assessment
Clinical examination of chest for respiration	<ul style="list-style-type: none"> • Detail introduction and explanation about inspection • Palpation • Percussion • Auscultation 	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	C1/C3 A3 P3	Practicals /skill lab	Viva Voce Ospe Video Assisted Assessment

Biochemistry Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Henderson Hassel batch equation	Illustrate Henderson Hassel batch equation. Measure pH by equation.	P	Skill lab	OSPE
Buffers	Illustrate buffer actions and buffer zone.	P	Skill lab	OSPE
pH meter	Measure the acidity or basicity of water-based solutions	P	Skill lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**
- **Longitudinal Themes**
 - **Biomedical Ethics & Professionalism**
 - **Family Medicine**
 - **Artificial Intelligence (Innovation)**
 - **Integrated Undergraduate Research Curriculum (IUGRC)**

Basic and Clinical Sciences (Vertical Integration)

Case Based Learning (CBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
Anatomy	• Lung's cancer	Apply basic knowledge of subject to study clinical case.	C3
	• Chest trauma	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Wheeze/Stridor	Apply basic knowledge of subject to study clinical case.	C3
	• Crib Death	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• CBL-ABGs	Apply basic knowledge of subject to study clinical case.	C3
	• CBL – uncouplers	Apply basic knowledge of subject to study clinical case.	C3

Large Group Interactive Sessions (LGIS)

Pathology

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Clinical disorders of Respiration:	• Discuss Pneumonia in detail.	C1	LGIS	MCQs
	• Discuss Tuberculosis in detail.	C1		
	• Discuss Cystic fibrosis in detail.	C1		
	• Discuss Respiratory Failure Incidence in detail.	C1		
	• Discuss Sign and symptoms in detail.	C1		
	• Discuss Pathophysiology in detail.	C1		

Surgery

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Chest Deformities (Congenital)	<ul style="list-style-type: none"> • Describe: • Various chest deformities & congenital malformations 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> • Significance of deformities 	C2		
	<ul style="list-style-type: none"> • General and operative management outline 	C2		
Pneumothorax	<ul style="list-style-type: none"> • Describe: • Various types of Pnuemothorax 	C2	LGIS	MCQs
	<ul style="list-style-type: none"> • Causes 	C2		
	<ul style="list-style-type: none"> • Signs and symptoms Significance of tension pneumothorax 	C2		
	<ul style="list-style-type: none"> • Emergency and definitive management 	C2		
Hemothorax	<ul style="list-style-type: none"> • Describe: • Various types of Hemothorax 	C2	LGIS	MCQ
	<ul style="list-style-type: none"> • Causes of Hemothorax 	C2		
	<ul style="list-style-type: none"> • Signs and symptoms of Hemothorax 	C2		
	<ul style="list-style-type: none"> • Emergency and definitive management 			
Pleural effusion	<ul style="list-style-type: none"> • Describe: • Definition 	C1	LGIS	MCQ
	<ul style="list-style-type: none"> • Causes 	C2		
	<ul style="list-style-type: none"> • Signs & symptoms 	C2		
	<ul style="list-style-type: none"> • General and operative management outlines 			

ENT

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Tonsillitis	• Define tonsillitis	C1	LGIS CBL	MCQs
	• Enlist the causes of tonsillitis	C1		
	• List the clinical features of tonsillitis	C2		
	• Enumerate the management of tonsillitis	C1		
Foreign body nose & ear	• Classify foreign bodies	C1	LGIS	MCQs
	• Enumerate emergency situations for removal.	C2	CBL	

Bioethics Professionalism & Behavioral Sciences

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Crises intervention and disaster	• To be able identify crises situations and learn the means to cope with them during disasters either natural or man made	C1 C2	LGIS CBL	MCQS
Conflict resolution and empathy	• To be able to identify crises situations and using empathy how to deal with these situations arising in clinical practice	C2	LGIS CBL	MCQS

Medicine

Topic	At the End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Tuberculosis	• Discuss TB.	C2	LGIS	MCQs
	• Discuss its diagnostic Criteria.	C2		
	• Describe How to treat a patient with TB.	C2		
Drowning & Strangulation	• Discuss How to manage a patient with drowning and strangulation.	C2	LGIS	MCQs

Climate Change & Health & Community Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Air and Ventilation Air composition & indices of thermal comfort	<ul style="list-style-type: none"> At the end of the session the students will be able to: Enlist indices of thermal comfort 	C1	LGIS	MCQ
	<ul style="list-style-type: none"> Describe the factors responsible for vitiation of air 	C2		
Air pollution and its factors	<ul style="list-style-type: none"> Define air pollution 	C1	LGIS	MCQ
	<ul style="list-style-type: none"> Identify sources of air pollution and air pollutants 	C1		
Preventive measures to control air pollution	<ul style="list-style-type: none"> Demonstrate selection of air sample for analysis 	C2	LGIS	MCQ
	<ul style="list-style-type: none"> Enumerate the methods to prevent & control of air pollution 	C1		
Air purification methods	<ul style="list-style-type: none"> Enlist natural and artificial methods of air purification. 	C1	LGIS	MCQ
Greenhouse effect	<ul style="list-style-type: none"> Describe the greenhouse effect 	C2	LGIS	MCQ
	<ul style="list-style-type: none"> Enlist greenhouse gases. 	C1		
	<ul style="list-style-type: none"> Identify sources of greenhouse gases 	C1		
Global warming and climate change	<ul style="list-style-type: none"> Demonstrate global warming. 	C2	LGIS	MCQ
	<ul style="list-style-type: none"> Define ozone hole. 	C1		
	<ul style="list-style-type: none"> Describe link between global warming and climate change 	C2		

Artificial Intelligence (AI)

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Artificial Intelligence basic concepts	<ul style="list-style-type: none"> To learn the concept of deep and superficial neural networks in AI 	C2	LGIS	MCQs

Family Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Approach to a Patient with cough & hemoptysis	<ul style="list-style-type: none"> Define cough & hemoptysis. 	C1	LGIS	MCQs
	<ul style="list-style-type: none"> Discuss differential diagnoses cough & hemoptysis. 	C2		
	<ul style="list-style-type: none"> When to refer a patient of cough & hemoptysis to pulmonologist 	C2		

Integrated Undergraduate Research Curriculum (IUGRC)

Topics	At the end of the session the student should be able to:	Learning Domains	Teaching Strategy	Assessment Tool
Practice session 6	<ul style="list-style-type: none"> Finalization of poster presentation Submission at SJRMC/any other medical journal 	C3	Activity	MCQs

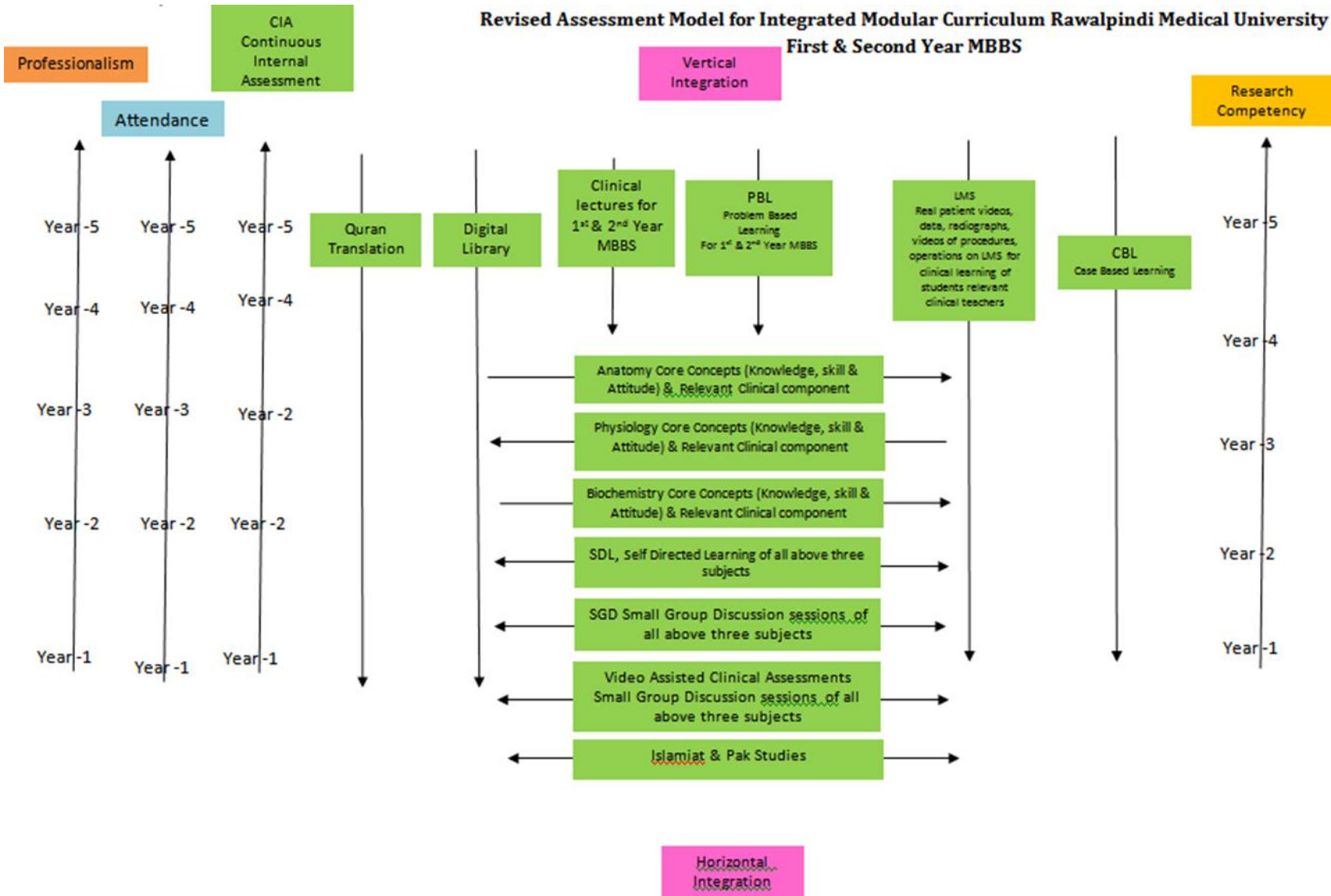
SECTION - IV

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in Respiration**

**Revised Assessment Model for Integrated Modular Curriculum Rawalpindi Medical University
First & Second Year MBBS**



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 - 74%	*75 - 80%	81 - 100%

90% is eligibility criteria for appearing in professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular, modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3 rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given the share according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based), modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
<p>There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination.</p> <p>It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)</p>	<p>Structured table viva voce is conducted including the practical content of the module.</p>

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
<p>There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.</p>	<p>This covers the practical content of the whole block.</p>

Table 4-Assessment Frequency & Time in Respiratory Module

Block	Sr #	Module – 1 Respiratory Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures	Formative	15 Minutes				
	7	Assessment of Bioethics Lectures	Summative	2 Minutes				
	8	Assessment of IUGRC Lectures	Summative	10 Minutes				

Learning Resources

Subject	Resources
Anatomy	<p>A. Gross Anatomy</p> <ol style="list-style-type: none"> 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III <p>B. Histology</p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. <p>C. Embryology</p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	<p>A. Textbooks</p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. <p>B. Reference Books</p> <ol style="list-style-type: none"> 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Harper's Illustrated Biochemistry 32th edition. 2. Lehninger Principle of Biochemistry 8th edition. 3. Biochemistry by Devlin 7th edition.
Community Medicine	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	<p>Textbooks</p> <ol style="list-style-type: none"> 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
	Textbooks

Pharmacology	<ol style="list-style-type: none">1. Lippincot Illustrated Pharmacology 9th edition.2. Basic and Clinical Pharmacology by Katzung 5th edition.
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SECTION - V

Time Table

Integrated Clinically Oriented Modular Curriculum for first Year MBBS

Respiration Module Time Table

First Year MBBS

Session 2023-2024

Batch- 50

Respiration Module Team

Module Name : Respiration Module
 Duration of module : 04 Weeks
 Coordinator : Dr. Kamil
 Co- Coordinator : Dr. Fareed Ullah
 Review by : Module Committee

Module Committee		Module Task Force	
Vice Chancellor RMU	Prof. Dr. Muhammad Umar	Coordinator	Dr. Kamil
Director DME	Prof. Dr. Rai Muhammad Asghar	DME Focal Person	Dr. Sidra Hamid
Convener Curriculum	Prof. Dr. Naeem Akhter	Co-coordinator	Dr. Quratulain Sharif (Senior Demonstrator of Anatomy)
Chairperson Anatomy & Dean Basic Sciences	Prof Dr. Ayesha Yousaf	Co-Coordinator	Dr. Uzma Zafar (Senior Demonstrator Biochemistry)
Additional Director DME	Prof. Dr. Ifra Saeed	Co-coordinator	Dr. Fareed Ullah (Senior Demonstrator Physiology) & Clinical Co- Coordinator
Chairperson Physiology	Prof. Dr. Samia Sarwar		
Chairperson Biochemistry	Dr. Aneela Jamil	DME Implementation Team	
Focal Person Anatomy First Year MBBS	Prof Dr. Ayesha Yousaf	Director DME	Prof. Dr. Rai Muhammad Asghar
Focal Person Physiology	Dr. Sidra Hamid	Implementation In charge 1st & 2 nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
Focal Person Biochemistry	Dr. Aneela Jamil	Deputy Director DME	Dr. Shazia Zeb
Focal Person Pharmacology	Dr. Zunera Hakim	Module planner & Implementation coordinator	Dr. Sidra Hamid
Focal Person Pathology	Dr. Asiya Niazi	Editor	Muhammad Arslan Aslam
Focal Person Behavioral Sciences	Dr. Saadia Yasir		
Focal Person Community Medicine	Dr. Afifa Kulsoom		
Focal Person Quran Translation Lectures	Dr. Fahd Anwar		

Discipline wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
III	<ul style="list-style-type: none"> Anatomy 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Embryology of Respiratory System 	Histology of Upper & Lower <ul style="list-style-type: none"> Respiratory System 	<ul style="list-style-type: none"> Gross Anatomy of Upper & Lower Respiratory System
	<ul style="list-style-type: none"> Biochemistry 	<ul style="list-style-type: none"> pH, Electron transport chain, Oxidative phosphorylation, Water soluble vitamins riboflavin, biotin, pyridoxine, pantothenic acid, Normal acid base regulation 			
	<ul style="list-style-type: none"> Physiology 	<ul style="list-style-type: none"> Pulmonary Ventilation, Pulmonary Volumes and Capacities, Alveolar Ventilation, Functions of the Respiratory Passageways Pulmonary Circulation, Pulmonary Edema, Physical Principles of Gas Exchange; Diffusion of Oxygen and Carbon Dioxide Through the Respiratory Membrane Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids Regulation of Respiration Useful Methods for Studying Respiratory Abnormalities, Respiratory Insufficiency, Hypoxia & Oxygen Therapy, Hypercapnia & Artificial Respiration Respiratory changes during Exercise, Aviation, Space & Deep-Sea Diving Physiology 			
	<ul style="list-style-type: none"> Research Club Activity (IUGRC) 	<ul style="list-style-type: none"> Poster Presentation 			
	<ul style="list-style-type: none"> Artificial Intelligence 	<ul style="list-style-type: none"> Artificial Intelligence basic concepts 			
	<ul style="list-style-type: none"> Family Medicine 	<ul style="list-style-type: none"> Approach to a patient with cough hemoptysis & shortness of breath 			
	<ul style="list-style-type: none"> Climate Change & Health 	<ul style="list-style-type: none"> Effects of Climate Changes on Body Systems (IHD, Skin Diseases & Heat Stroke) Effects of Climate Changes on Respiratory System (Asthma, COPD, Allergies & Cancers) Greenhouse effect Global warming and climate change 			
	<ul style="list-style-type: none"> Bioethics Professionalism & Behavioral Sciences 	<ul style="list-style-type: none"> Crises intervention and disaster Conflict resolution and empathy 			
	<ul style="list-style-type: none"> Vertical components 	<ul style="list-style-type: none"> The Holy Quran Translation Component 			
	<ul style="list-style-type: none"> Vertical Integration 	<ul style="list-style-type: none"> Clinically Content Relevant to Respiratory Module Tuberculosis (Medicine) Clinical disorders of Respiration (Pathology) Foreign body nose & ear & Tonsillitis (ENT) 			

Categorization of Modular Contents Anatomy

Category A*	Category B**	Category C***			
Special Embryology	Special Histology	Demonstrations / SGD	CBL	Practical's	Self-Directed Learning (SDL)
		<ul style="list-style-type: none"> • Nose and Paranasal sinuses • Larynx and trachea • Overview of thoracic wall • Skeleton of thoracic wall (Ribs) • Skeleton of thoracic wall (Sternum) • Joints of Thoracic Wall • Thoracic Apertures • Movements Of Thoracic Wall & Intercostal Spaces • Diaphragm • Vasculature of thoracic wall • Innervation of Thoracic Wall • Pleura • Lungs • Radiology & Surface Marking 	<ul style="list-style-type: none"> • Lungs and its lymphatics • Thorax & Pleura 	<ul style="list-style-type: none"> • Nose/paranasal sinuses /epiglottis • Trachea • Lungs 	<ul style="list-style-type: none"> • Nose paranasal sinus larynx and trachea • Skeleton of thoracic wall • Movement of Thoracic Wall & Intercostal Spaces • AnatomyOf diaphragm • Anatomy Pleura • Lungs

Category A*: By Professor

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy department	01
2.	Associate Professor of Anatomy department (AP)	01
3.	Demonstrators of Anatomy department	04

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$2 * 08 = 16$ hours
2.	Small Group Discussions (SGD)	$1 * 4, 2 * 11 = 26$ hours
3.	Practical / Skill Lab	$7.5 * 3 = 22.5$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$1 * 8 = 8$ hours
2.	Small Group Discussions (SGD)	$1 * 4, 2 * 11 = 26$ hours
3.	Practical / Skill Lab	$1.5 * 3 = 4.5$ hours
4.	Self-Directed Learning (SDL)	$2 * 6 = 12$ hours

Physiology

Category A*	Category B**	Category C***					
			PBL	Demonstrations / SGD	CBL	SKL/Practical's	Self-Directed Learning (SDL)
<ul style="list-style-type: none"> • Transport of oxygen (Prof. Dr. Samia Sarwar/Dr Sheena) • Oxygen hemoglobin dissociation curve (Prof. Dr. Samia Sarwar/Dr Sheena) • Transport of CO₂ (Prof. Dr. Samia Sarwar/Dr Iqra) • Nervous regulation of respiration (Prof. Dr. Samia Sarwar/Dr Kamil) • Chemical regulation of respiration & exercise changes (Prof. Dr. Samia Sarwar/Dr Kamil) • Space physiology (Prof. Dr. Samia Sarwar/Dr Fareed) • High altitude physiology (Prof. Dr. Samia Sarwar/Dr Fareed) • Deep sea physiology (Prof. Dr. Samia Sarwar/Dr Nayab) • Mechanics of pulmonary ventilation, Lung compliance (By Dr. Shmyla) • Pulmonary volumes, capacities & functions of respiratory tract (By Dr. Shmyla) • Ventilation perfusion ratio (By Dr. Shmyla) • Lung function teRespiratory abnormalities (COPD, Tuberculosis, Pneumonia, Atelectasis) • (By Dr. Shmyla)st (By Dr. Shmyla) • Hypoxia, hypercapnia, cyanosis (By Dr. Shmyla) 		Transport of CO ₂ (Prof. Dr. Samia Sarwar/Dr Iqra) Deep sea physiology (Prof. Dr. Samia Sarwar/Dr Nayab)	One PBL In two sessions	<ul style="list-style-type: none"> • Physiology of unusual environment. • Mechanics of pulmonary ventilation & compliance (Second week) • Ventilation perfusion ratio & regulation of respiration (Second week) 	<ul style="list-style-type: none"> • Wheeze/Strid or • Crib Death 	<ul style="list-style-type: none"> • Measurement of different lung volume & capacities with the help of spirometer • Recording of normal and modified movement of respiration (Stethography) • Clinical examination of chest for respiration. 	(OFF CAMPUS) <ul style="list-style-type: none"> • Mechanics of pulmonary ventilation, Lung compliance • Pulmonary circulation • Pulmonary volumes, capacities • Transport of oxygen • Chemical regulation of respiration & exercise changes • Hypoxia, hypercapnia, cyanosis

Category A*: By Professor

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / HumanResource	Total number ofteaching staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	$16 \times 1 = 16$ Hours
2.	Small Group Discussions (SGD)/CBL	$1.5 \times 3 = 4.5$ Hours + 2 Hours (2nd week) = 6.5 Hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	$1.5 \times 3 = 4.5$ Hours
5.	Self-Directed Learning (SDL)	$6 \times 1 = 6$ Hours (Off Campus)

Biochemistry

Category A*	Category B**				
LGIS	LGIS	PBL	CBL	Practical's	SGD
<ul style="list-style-type: none"> • Simple Lipids • Compound Lipids (phospholipids, glycolipids, lipoproteins) • Prostaglandins 	<ul style="list-style-type: none"> • Definition and Biological importance of Lipids • Fatty acids • Derived lipids • Cholesterol • Introduction and classification of carbohydrates • Isomerism, optical activity and mutarotation • Monosaccharide • Disaccharides • Homopolysaccharides • Heteropolysaccharides 		<ul style="list-style-type: none"> • Atherosclerosis • Heteropoly saccharides 	<ul style="list-style-type: none"> • Lipid solubility • Benedict's test and Molisch's test • Barfoed's Test and Selivanoff's test • Iodine Test 	<ul style="list-style-type: none"> • Classification of carbohydrates and lipids • Classification and properties of fatty acids

Category A*: By HOD and Assistant Professor

Category B:** By All (HOD, Assistant Professors, Senior Demonstrators)

Category C*:** (By All Demonstrators)

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1	Assistant professor of biochemistry department (AP)	01
2	Demonstrators of biochemistry department	07

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	$2 * 8 = 16$ hours	08
2.	Small Group Discussions (SGD)	$1.5 * 5 = 7.5$ hours	06
3.	Problem Based Learning (PBL)	Zero	zero
4.	Practical / Skill Lab	$1.5 * 5 = 7.5$ hours	6
5.	Self-Directed Learning (SDL)	-----	08

Timetable For Respiratory Module 02-10-2023 TO 07-10-2023 (First Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM	11:00AM-12:00 PM	12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)				
02-10-2023 MONDAY	DISSECTION SGD		ANATOMY (LGIS)		DME SESSION		Break	Practical & CBL Topics & venue mentioned at the end	SDL Physiology Mechanics of pulmonary ventilation, Lung Compliance		
	Nose and Paranasal sinuses		Development of Respiratory System (Nose & Paranasal sinuses) Prof. Dr. Ayesha Yousaf (Even)	Histology of Respiratory System I Assoct. Prof. Dr. Mohtasham (Odd)	Feedback & Paper Discussion Dr. Sidra Hamid/ Dr. Saira Aijaz | Dr. Maria, Dr. Aneela & Dr Anila yasmeen						
03-10-2023 TUESDAY	DISSECTION SGD		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & CBL Topics & venue mentioned at the end	SDL Physiology Pulmonary circulation		
	Larynx and trachea		PH, PKa, Henderson Hasselbalch equation Dr. Isma (Even)	Electron transport chain Dr. Aneela jamil (Odd)	Mechanics of pulmonary ventilation, Lung compliance Dr. Faizania (Even)	Pulmonary circulation & Pulmonary capillary dynamics. Physical principles of gas exchange & diffusion through respiratory membrane Dr. Kamil (Odd)					
04-10-2023 WEDNESDAY	DISSECTION SGD		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & CBL Topics & venue mentioned at the end	SDL Biochemistry Biochemistry role of buffers in pH regulation HH equation		
	Overview of thoracic wall		Histology of Respiratory system I Assoct. Prof. Dr. Mohtasham (Even)	Development of Respiratory System (Nose & Paranasal sinuses) Prof. Dr. Ayesha (Odd)	Pulmonary circulation & Pulmonary capillary dynamics Physical principles of gas exchange & diffusion through respiratory membrane Dr. Kamil (Even)	Mechanics of pulmonary ventilation Lung compliance Dr. Faizania (Odd)					
05-10-2023 THURSDAY	DISSECTION/SGD	PBL SESSION -I		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & CBL Topics & venue mentioned at the end	SDL AI Artificial Intelligence basic concepts	
	Skeleton of thoracic wall (Ribs)	Asbestosis First Year Batch of Physiology Teachers Supervised by Dr. Sidra Hamid		Histology of Respiratory system II Assoct. Prof. Dr. Mohtashim (odd)	Development of Respiratory system (Trachea and Larynx) Prof. Dr. Ayesha (Even)	Transport of oxygen Prof. Dr. Samia / Dr. Sheena (Odd)	Pulmonary volumes, capacities & functions of respiratory tract Dr. Faizania (even)				
06-10-2023 FRIDAY	DISSECTION/SGD		QURAN TRANSLATION – I		PHYSIOLOGY LGIS		BIOCHEMISTRY (LGIS)		Break	SDL Anatomy Nose paranasal sinus larynx and trachea	
	Skeleton of thoracic wall (Sternum)		Immaniat- V & VI Mufti Naeem (Even)	Ibaadat-V Molana AbdulWahid (Odd)	Pulmonary volumes, capacities & functions of respiratory tract Dr. Faizania (Odd)	Transport of oxygen Prof. Dr. Samia / Dr. Sheena (even)	Electron transport chain Dr. Aneela Jamil (Even)	PH, pKa, Henderson Hasselbalch equation Dr. Isma (Odd)			
07-10-2023 SATURDAY	BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		ANATOMY (LGIS)		PHYSIOLOGY LGIS		Break	Practical & CBL Topics & venue mentioned at the end	SDL Anatomy Skeleton of thoracic wall
	Oxidative phosphorylation Dr. Aneela Jamil (even)	Normal pH regulation by buffers Dr. Isma (Odd)	Oxygen hemoglobin dissociation curve Prof. Dr. Samia / Dr. Sheena (even)	Ventilation perfusion ratio Dr. Nayab (Odd)	Development of Respiratory system (Trachea and Larynx) Prof. Dr. Ayesha (Even)	Histology of Respiratory system II Assoct. Prof. Dr. Mohtashim (Odd)	Ventilation perfusion ratio Dr. Nayab (even)	Oxygen hemoglobin dissociation curve Prof. Dr. Samia / Dr. Sheena (Odd)			

Topics For Practical with Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> Olfactory nasal mucosa/Epiglottis/ (Anatomy/ Histology-practical) venue Histology Laboratory HH equation (Biochemistry practical) venue- Biochemistry Laboratory Measurement of different lung volume & capacities with the help of spirometer (Physiology – practical) Physiology Laboratory 						<ul style="list-style-type: none"> Biochemistry tutorial- Electron transport chain (Lecture Hall 03) Physiology CBL Wheeze/Stridor. (Lecture Hall 05) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD	Batches	Roll No	Anatomy Teacher	Venue	
Monday	C	B	E	A	D	A	01-90	Dr. Quratulain Sharif	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	91-180	Dr. Ali Raza	New Lecture Hall Complex Lecture Theater # 04	
Wednesday	E	D	B	C	A	C	181- 270	Dr. Urooj	New Lecture Hall Complex Lecture Theater # 02	
Thursday	B	A	D	E	C	D	271 - onwards	Dr. Zanera Saqib	New Lecture Hall Complex Lecture Theater # 01	
Saturday	A	E	C	D	B					
1 st week Practical by Dr. Ali Raza										
Venue For First Year Batches For PBL & SGD Team-I						Sr.No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq		1	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani		2	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar		3	Batch –C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room(Basement)		Dr. Fareedullah		4	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas(PGT Physiology)		5	Batch -E	281-onwards	Dr. Faiza Zafar	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03	
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02	
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						
						Venues for Large Group Interactive Session (LGIS) and SDL				

**Timetable For Respiratory Module
09-10-2023 TO 14-10-2023 (Second Week)**

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM	11:00AM-12:00 PM	12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)		
09-10-2023 MONDAY	DISSECTION/SGD		MEDICINE (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & CBL Topics & venue mentioned at the end	SDL Physiology Lung volumes and capacities
	Joints of Thoracic Wall		Tuberculosis		Transport of CO ₂	Lung function test			
10-10-2023 TUESDAY	DISSECTION/SGD	PBL SESSION -II	ANATOMY (LGIS)		CLIMATE CHANGE & HEALTH			Practical & CBL Topics & venue mentioned at the end	SDL Physiology Transport of Oxygen
	Thoracic Apertures	Asbestosis First Year Batch Of Physiology Teachers	Histology of Respiratory system III	Development of Respiratory System (Lungs)	Effects of Climate Changes on Body Systems (IHD, Skin Diseases & Heat Stroke)				
		PBL Team – I Supervised by Dr. Sidra Hamid	Assoct. Prof. Dr. Mohtashim (even)	Prof. Dr. Ayesha (Odd)	Dr. Sidra Hamid	Dr. Maria Tasleem			
11-10-2023 WEDNESDAY	DISSECTION/SGD		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)			Practical & CBL Topics & venue mentioned at the end	SDL Biochemistry Role of buffers (chemical and physiological)
	Movements of Thoracic Wall & Intercostal Spaces		Development of Respiratory system (Lungs)	Histology of Respiratory system III	Lung function test	Transport of CO ₂			
12-10-2023 THURSDAY	DISSECTION/SGD	PRACTICAL COPIES		ANATOMY (LGIS)		FAMILY MEDICINE (LGIS)		Practical & CBL Topics & venue mentioned at the end	SDL Biochemistry pH meter and body buffers
	Diaphragm	Marking by QEC, Dean & DME		Development of Respiratory system (Diaphragm)	Histology of Respiratory system IV	Approach to a patient with cough hemoptysis & shortness of breath			
		Dr. Fareed (Odd)	Dr. Quratulain (Even)	Prof. Dr. Ayesha (Even)	Assoct. Prof. Dr. Mohtashim(Odd)	Dr. Sidra Hamid (Even)	Dr. Sadia Khan (Odd)		
13-10-2023 FRIDAY	DISSECTION/SGD	BIOCHEMISTRY (LGIS)		ANATOMY (LGIS)		BEHAVIOUR SCIENCES & BIOETHICS		SDL Anatomy Movement of Thoracic Wall & Intercostal Spaces	
	Diaphragm	NormalpH regulation by buffers	Oxidative phosphorylation	Thoracic Radiology		Crises intervention and disasterConflict resolution and empathy			
Dr. Isma (even)		Dr. Aneela Jamil(Odd)	Dr. Minahil		Dr Muhammad Azeem Rao				
14-10-2023 SATURDAY	DISSECTION/SGD	PHYSIOLOGY (LGIS)		RESEARCH CLUB ACTIVITY		PHYSIOLOGY (LGIS)		Practical & CBL Topics & venue mentioned at the end	SDL AnatomyOf diaphragm
	Vasculature of thoracic wall	Respiratory abnormalities	Nervous regulationof respiration	Poster Presentation		Nervous regulation of respiration	Respiratory abnormalities		
	Dr. Faizania (Even)	Prof.Dr. Samia / Dr. Kamil (Odd)	Dr. Sidra Hamid (Even)	Dr Khaula (Odd)	Prof.Dr. Samia / Dr. Kamil (Even)	Dr. Faizania (Odd)			

Topics For Practical With Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> • Trachea (Anatomy/ Histology-practical) venue Histology Laboratory • Buffers (Biochemistry practical) venue- Biochemistry Laboratory • Recording of normal and modified movement of respiration (Stethography) (Physiology –practical) Physiology Laboratory 						<ul style="list-style-type: none"> • Biochemistry CBL-Acid based (Lecture Hall 03) • Physiology CBL Crib Death. (Lecture Hall 05) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	BiochemistrySGD	Batches	Roll No	AnatomyTeacher	Venue	
Monday	C	B	E	A	D	A	01-90	Dr. Quratulain Sharif	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	91-180	Dr. Ali Raza	New Lecture Hall Complex Lecture Theater # 04	
Wednesday	E	D	B	C	A	C	181- 270	Dr. Urooj	New Lecture Hall Complex Lecture Theater # 02	
Thursday	B	A	D	E	C	D	271 - onwards	Dr. Zanera Saqib	New Lecture Hall Complex Lecture Theater # 01	
Saturday	A	E	C	D	B					
2 nd week Practical by Dr. Quratulain Sharif										
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani		2.	Batch – B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar		3.	Batch – C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room(Basement)		Dr. Fareedullah		4.	Batch – D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas(PGT Physiology)		5.	Batch - E	281- onwards	Dr. Faiza Zafar	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)		Odd Roll Numbers		New Lecture Hall Complex Lecture Theater # 03		
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)		Even Roll Number		New Lecture Hall Complex Lecture Theater # 02		
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						
Venues for Large Group Interactive Session (LGIS) and SDL										

Timetable For Respiratory Module 16-10-2023 TO 21-10-2023 (Third Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM	11:00AM-12:00 PM	12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)	
16-10-2023 MONDAY	DISSECTION/SGD	PATHOLOGY		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		
	Innervation of Thoracic Wall	Clinical disorders of Respiration		Histology of Respiratorysystem IV	Development of Respiratorysystem (Diaphragm)	Hypoxia, hypercapnia, cyanosis	Chemical regulation of respiration & exercise changes	
		Dr. Sara(Even)	Dr. Aasia(Odd)	Assoc. Prof. Dr. Mohtashim(Even)	Prof. Dr. Ayesha (Odd)	Dr. Nayab (Even)	Prof.Dr. Samia / Dr. Kamil(Odd)	
17-10-2023 TUESDAY	DISSECTION/CBL		PHYSIOLOGY (LGIS)		PHYSIOLOGY (LGIS)		Break	
	Pleura		Hypoxia, hypercapnia,cyanosis	Chemical regulation of respiration & exercise changes	Chemical regulation of respiration & exercise changes	Hypoxia, hypercapnia, cyanosis		Practical & CBLTopics & venue mentioned at theend
		Dr. Shmyla Hamid (Even)	Prof.Dr. Samia /Dr. Kamil(Odd)	Prof.Dr. Samia / Dr. Kamil(Even)	Dr. Nayab (Odd)	SDL Physiology Chemical regulation of respiration & exercise changes Online SDLEvaluation		
18-10-2023 WEDNESDAY	DISSECTION/CBL		COMMUNITY MEDICINE		PHYSIOLOGY (LGIS)			Practical & CBLTopics & venue mentioned at theend
	Lungs		Greenhouse effect		Miscellaneous factors affecting respiration (concept of voluntary control of respiration, lung J receptor, brain edema, anesthesia, chyne stokes breathing, sleep apnea)	Space physiology			SDL Biochemistry Pyridoxine
		Dr. Rizwana (Odd)	Dr. Asif (Even)	Dr. Kamil (Even)	Prof. Dr Samia / Dr. Fareed(Odd)			
19-10-2023 THURSDAY	DISSECTION/SGD	DEEN CLUB ACTIVITY			PHYSIOLOGY (LGIS)		Practical & CBLTopics & venue mentioned at theend	
	Lungs	Lecture on Character Building Activity of Counselling Cell			Space physiology	Miscellaneous factors affecting respiration (concept of voluntary control of respiration, lung J receptor, brain edema, anesthesia, chyne stokes breathing, sleep apnea)		SDL Biochemistry Xenobiotic Online Clinical Evaluation
				Prof. Dr Samia / Dr. Fareed(Even)	Dr. Kamil(Odd)			
20-10-2023 FRIDAY	BIOCHEMISTRY (LGIS)		ENT (LGIS)		COMMUNITY MEDICINE		PHYSIOLOGY (LGIS)	
	Pyridoxin Pant ethnic acid biotin &Ribo flavin	Xenobiotics	Foreign body nose & ear &Tonsillitis		Global warming and climate change		Deep sea physiology	High Altitude Physiology
	Dr. Almas (Even)	Dr. Uzma Zafar (Odd)	Dr. Sundus (Even)	Dr. Arshad (Odd)	Dr. Rizwana (Odd)	Dr. Asif (Even)	Prof. Dr. Samia /Dr. Nayyab (even)	Prof. Dr. Samia / Dr. Fareed (Odd)
21-10-2023 SATURDAY	DISSECTION/SGD		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		Break	
	Radiology & Surface Marking		Xenobiotics	Pyridoxin&Pantot henic acidbiotin&Ribof lavin	High AltitudePhysiology	Deep sea physiology		Practical & CBLTopics & venue mentioned at theend
			Dr. Uzma Zafar(even)	Dr. Almas (Odd)	Prof. Dr. Samia /Dr. Fareed (even)	Prof. Dr. Samia /Dr. Nayyab (Odd)	SDL Anatomy Lungs	

Topics For Practical With Venue						Topics For Small Group Discussion & CBLs With Venue				
<ul style="list-style-type: none"> Lungs (Anatomy/ Histology-practical) venue Histology Laboratory pH meter (Biochemistry practical) venue- Biochemistry Laboratory Clinical examination of chest for respiration (Physiology –practical) Physiology Laboratory 						<ul style="list-style-type: none"> Biochemistry CBL – Vitamin biotin and pantothenic acid uncouplers (Lecture Hall 03) Physiology tutorial- physiology of unusual environmental (Lecture Hall 05) 				
Schedule For Practical / Small Group Discussion						Venue For First Year Batches For Anatomy Dissection / Small Group Discussion				
Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	BiochemistrySGD	Batches	Roll No	AnatomyTeacher	Venue	
Monday	C	B	E	A	D	A	01-90	Dr. Quratulain Sharif	Lecture Hall No.03 Anatomy Lecture Hall	
Tuesday	D	C	A	B	E	B	91-180	Dr. Ali Raza	New Lecture Hall Complex Lecture Theater # 04	
Wednesday	E	D	B	C	A	C	181- 270	Dr. Urooj	New Lecture Hall Complex Lecture Theater # 02	
Thursday	B	A	D	E	C	D	271 - onwards	Dr. Zanera Saqib	New Lecture Hall Complex Lecture Theater # 01	
Saturday	A	E	C	D	B					
3 rd week Practical by Dr. Kashif										
Venue For First Year Batches For PBL & SGD Team-I						Sr. No	Batch	Roll no	Names of Teachers	
Batches	Roll No	Venue							Biochemistry	Physiology
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02		Dr. Sheena Tariq		1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03		Dr. Uzma Kiani		2.	Batch – B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)		Dr. Fahd Anwar		3.	Batch – C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room(Basement)		Dr. Fareedullah		4.	Batch – D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
Batch-C1	(141-175)	Lecture Hall no.04(Basement)		Dr. Maryam Abbas (PGT Physiology)		5.	Batch - E	281- onwards	Dr. Faiza Zafar	Dr. Fareed
Batch-C2	(176-210)	Lecture Hall no.05(Basement)		Dr. Nayab (PGT Physiology)						
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)		Dr. Iqra Ayub (PGT Physiology)						
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)		Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)		Odd Roll Numbers			New Lecture Hall Complex Lecture Theater # 03	
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)		Dr. Izzah (PGT Physiology)		Even Roll Number			New Lecture Hall Complex Lecture Theater # 02	
Batch-E2	(315 onwards)	Lecture Hall no.05 Physiology		Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)						
Venues for Large Group Interactive Session (LGIS) and SDL										

**Timetable For Respiratory Module
23-10-2023 TO 28-10-2023 (Fourth Week)**

DAY/ TIME	8:00AM-9:00AM
23-10-2023 MONDAY	Assessment Week
24-10-2023 TUESDAY	
25-10-2023 WEDNESDAY	
26-10-2023 THURSDAY	
27-10-2023 FRIDAY	
28-10-2023 SATURDAY	

SECTION VI

Table of Specification (TOS) For Respiratory Module Examination for First Year MBBS

Sr. #	Discipline	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Viva voce/OSPE	Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3		
1.	Anatomy	25	15	5	5	5	25	1	2	2	50	100
2.	Physiology	30	18	9	3	4	20	1	2	1	50	100
3.	Biochemistry	5	3	2	-	3	15	-	1	-	20	20
4.	Bioethics Professionalism	5										5
5.	Research, Artificial Intelligence & Innovation	10										6
6.	Behavioral Sciences	2										2
7.	Family Medicine	1										1
Grand Total											234	

Annexure-I

(Sample MCQ, SEQ & OSPE papers)

RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT
1ST YEAR MBBS MCQs RESPIRATORY MODULE EXAM

1. Radiographic examination of a patient with insufficient breathing movements reveals permanent elevation and paradoxical movement of one half of the diaphragm, most likely reason is
 - a. Irritation of diaphragm bilaterally
 - b. Unilateral damage of phrenic nerve
 - c. Injury to intercostal nerves on one side
 - d. Vagal stimulation
 - e. Damage to respiratory center
2. Lymphatics from the back of thoracic wall drains into
 - a. posterior intercostal nodes
 - b. internal mammary nodes
 - c. anterior intercostal nodes
 - d. pectoral nodes
 - e. subdiaphragmatic node
3. Type I Pneumocytes covering approximately 95% of the alveolar surface are
 - a. Source of surfactant
 - b. Squamous & Thin
 - c. Having microvilli at apical surface
 - d. Joined with neighboring cells by adhering junctions
 - e. Also called dust cells
4. A 60 years old man presented to OPD with edema of lower limbs, on investigations there is obstruction of the inferior vena cava, alternative pathway to return of blood to right atrium is provided by
 - a. Azygos vein
 - b. Inferior hemiazygos vein
 - c. Superior hemiazygos vein
 - d. Right subcostal vein
 - e. Internal thoracic vein
5. Non-ciliated dome shaped cells with apical ends bulging due to secretory granules; also involved in producing protein content of surfactants in the lining of bronchioles are
 - a. Type I pneumocytes
 - b. Type II pneumocytes
 - c. Clara cells
 - d. Brush cells
 - e. Goblet cells

RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT
1ST YEAR MBBS SEQs RESPIRATORY MODULE EXAM

1. A person sustained multiple rib fractures in a road traffic accident. After this he developed flail chest.
 - a. What is the movement of chest wall in this condition? (1)
 - b. Explain pump handle movement of chest wall. (2)
 - c. Give contents of intercostal space. (2)
2. a. Give characteristic features of interior of right ventricle. (3)
 - b. What is a moderator band? (1)
 - c. Define sudden death syndrome. (1)
 - a. Discuss formation and partitioning of heart tube. (3)
 - b. Enlist different types of inter atrial septal defects. (2)
4. a. Discuss characteristic features of sinusoidal capillaries. (1)
 - b. Draw and label elastic artery. (2)
 - c. Give location and function of type II pneumocytes. (2)

RAWALPINDI MEDICAL UNIVERSITY
PHYSIOLOGY DEPARTMENT
1ST YEAR MBBS MCQs RESPIRATORY MODULE EXAM

1. When the radius of resistance vessels is increased there will be increase in:
 - a. Capillary blood flow
 - b. Diastolic blood pressure
 - c. Hematocrit
 - d. Systolic blood pressure
 - e. Viscosity of blood

2. Turbulence in a blood vessel is inversely proportional to the :
 - a. Viscosity of blood
 - b. Velocity of blood flow
 - c. Diameter of the vessel
 - d. Density of fluid inside the vessel
 - e. Reynolds' number

3. A physiologist while teaching the concept of Starling forces directs his students with the subsequent data to calculate the net force. Pressure in the capillary in muscle= 35 mm Hg at the arteriolar end, 14 mm Hg at the venular end. The interstitial pressure= 0 mm Hg. The colloid osmotic pressure is 25 mm Hg in capillary and 1 mm Hg in interstitium. The net force producing fluid movement across the capillary wall at its arteriolar end is:
 - a. 10mmHg filtration
 - b. 11mmHg filtration
 - c. 11mmHg reabsorption
 - d. 3mmHg filtration
 - e. 3mmHg reabsorption

4. In local control of blood flow the most significant regulatory mechanism is the :
 - a. Release of adrenal medullary catecholamines
 - b. Local concentration of metabolites
 - c. Local concentration of cellular nutrients
 - d. Sympathetic activation of blood vessels
 - e. Sympathetic inhibition of blood vessels

5. Neural control of circulation predominates over local control in the :
 - a. Brain
 - b. Heart
 - c. Kidney
 - d. Skeletal muscle
 - e. Skin

RAWALPINDI MEDICAL UNIVERSITY
PHYSIOLOGY DEPARTMENT
1ST YEAR MBBS SEQs RESPIRATORY MODULE EXAM

- Q.1 Draw and label a normal electrocardiogram. Give the normal duration of PR interval, in which condition it is prolonged. (3,2)
- Q.2 Define cardiac output. Give its normal values in males and females. Enlist factors causing hypoeffective heart (2,3)
- Q3 A 50-year-old smoker progressively developed dyspnea and cough over a few months. After clinical examination and lung function tests he was diagnosed to be suffering from pulmonary emphysema.
- a. How ventilation perfusion ratio will be altered in this patient? (3)
 - b. Enumerate the muscles that elevate the chest cage during inspiration (2)
- Q.4 a. Define and give normal values:
- 1. Functional residual capacity (1.5)
 - 2. Vital capacity (1.5)
- b. What is the physiological significance of Functional residual capacity? (2)

RAWALPINDI MEDICAL UNIVERSITY
BIOCHEMISTRY DEPARTMENT
1ST YEAR MBBS MCQs RESPIRATORY MODULE EXAM

1. Buffer has maximum buffering capacity when
- pH is acidic
 - pH < pKa
 - pH = pKa
 - pH > pKa
 - pH is alkaline
2. NAD is the coenzyme in the following type of chemical reactions
- Carboxylation
 - Phosphorylation
 - Decarboxylation
 - Oxidation – reduction
 - Transamination
3. The following complex of electron transport chain is inhibited by Antimycin A
- Complex I
 - Complex II
 - Complex III
 - Complex IV
 - Complex V
4. Following complex of electron transport chain contains copper:
- Complex I
 - Complex II
 - Complex III
 - Complex IV
 - Complex V

SEQ

Q. Explain Chemiosmotic hypothesis of ATP synthesis. 05

RAWALPINDI MEDICAL UNIVERSITY
1ST YEAR MBBS BIOETHICS MCQs EXAM

1. ---Includes rules of conduct that may be used to regulate our activities concerning the biological world.
 - a. Bio-piracy
 - b. Biosafety
 - c. Bioethics
 - d. Bio-patents
 - e. Bio-logistic
2. The right of patients having self-decision is called.
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
3. Following is not code of ethics.
 - a. Integrity
 - b. Objectivity
 - c. Confidentiality
 - d. Behaviour
 - e. Autonomy
4. -----in the context of medical ethics, if it's fair and balanced
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity
5. -----Principle requiring that physicians provide, positive benefits
 - a. Justice
 - b. Autonomy
 - c. Beneficence
 - d. Veracity
 - e. Fidelity

Rawalpindi Medical University
Department of Anatomy
Block-I OSPE 1st Year MBBS

For Candidate:

Station No. 1

Time Allowed: 1 Min 30secs

Histology sketch copy will be assessed for

- a. Complete index (1)
- b. Complete and signed diagrams (1)
- c. 2 ID points mentioned with each diagram (1)

Station No. 2

For Candidate: Time Allowed: 1 Min 30secs

- a. Identify slide A (1)
- b. Identify slide B (1)
- c. What are common locations of slide A in human body (1)

Rawalpindi Medical University
Department of Physiology
Block-I OSPE 1st Year MBBS

For Candidate:

Time Allowed: 2 Minutes

- 1 A resident of internal medicine was examining a visibly dyspnoeic old man, he noted pulsations in the neck, he was confused about their nature. Enlist some maneuvers which will ascertain the nature of the pulsation. **(2.5)**

- 2 Give 03 sites for recording arterial pulse. **(0.5)**

**Rawalpindi Medical University
Department of Biochemistry
Block-I OSPE 1st Year MBBS**

For Candidate:

Station No. 1

Time Allowed: 2 Mins

Observed Station

Perform Iodine test. 03

For Organizer:

Station No. 2

Observed Station

Observe the slide under the microscope. Give one identifying feature. 03

SECTION-III

Assessment Model



**THE INTEGRATED & CLINICALLY ORIENTED ASSESSMENT MODEL FOR UNDER
GRADUATES
RAWALPINDI MEDICAL UNIVERSITY**

“MUMTAHIN” “ممتحن” (THE EXAMINER)

Foreword by the Vice Chancellor of Rawalpindi Medical University:

Educators have explored the specialized needs of assessments for decades. Good quality assessment not only contributes to student's learning. It provides important data to determine the program effectiveness, improves developing educational concepts. Historically, assessment programs were meant to foster curricular accountability for learning goals. These two aspects of the assessment process are now merging to form ultimately guarantee educational quality. Rawalpindi medical university is one of the leading public sector structured model of assessment. It is a big challenge to develop and implement modern document related to integrated and subject based approach towards assessment with incorporation of integrated teaching and model of assessment keeping in view the international standards and the outcome which should not be



satisfies the needs of accreditation but also the teaching program, and helps in improvements or to demonstrate tougher accreditation standards that universities, where we are following assessment. This model reflects an learning strategies. We prepared this compromised.

Prof. Muhammad Umar

(Sitar-e-Imtiaz)

(MBBS, MCPS, FCPS, FACG, FRCP (Lon), FRCP (Glasg), AGAF)

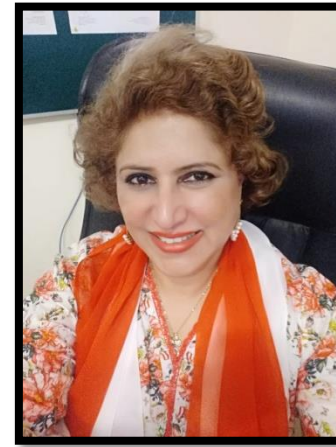
Vice Chancellor

Rawalpindi Medical University & Allied Hospitals

Rawalpindi

Overall write up, structuring & vision under the guidance of the Vice Chancellor of Rawalpindi Medical University. (In addition to the component of Physiology for the First & Second Year MBBS)

Assessment is the ongoing process of gathering, analysing and reflecting on evidence to make informed and consistent judgements to improve future student learning.



Prof. Dr. Samia Sarwar
Head/ Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Contributions

Sr. No **Heads of The Departments /
Deans**

1.



Prof. Dr. Tehzeeb ul Hassan
Head of Anatomy Deptt

Subjects

Component of Anatomy for
1st& 2nd Year MBBS

2.



Dr. Tehmina Qamar
Head of Biochemistry Deptt

Component of Biochemistry for
1st& 2nd Year MBBS

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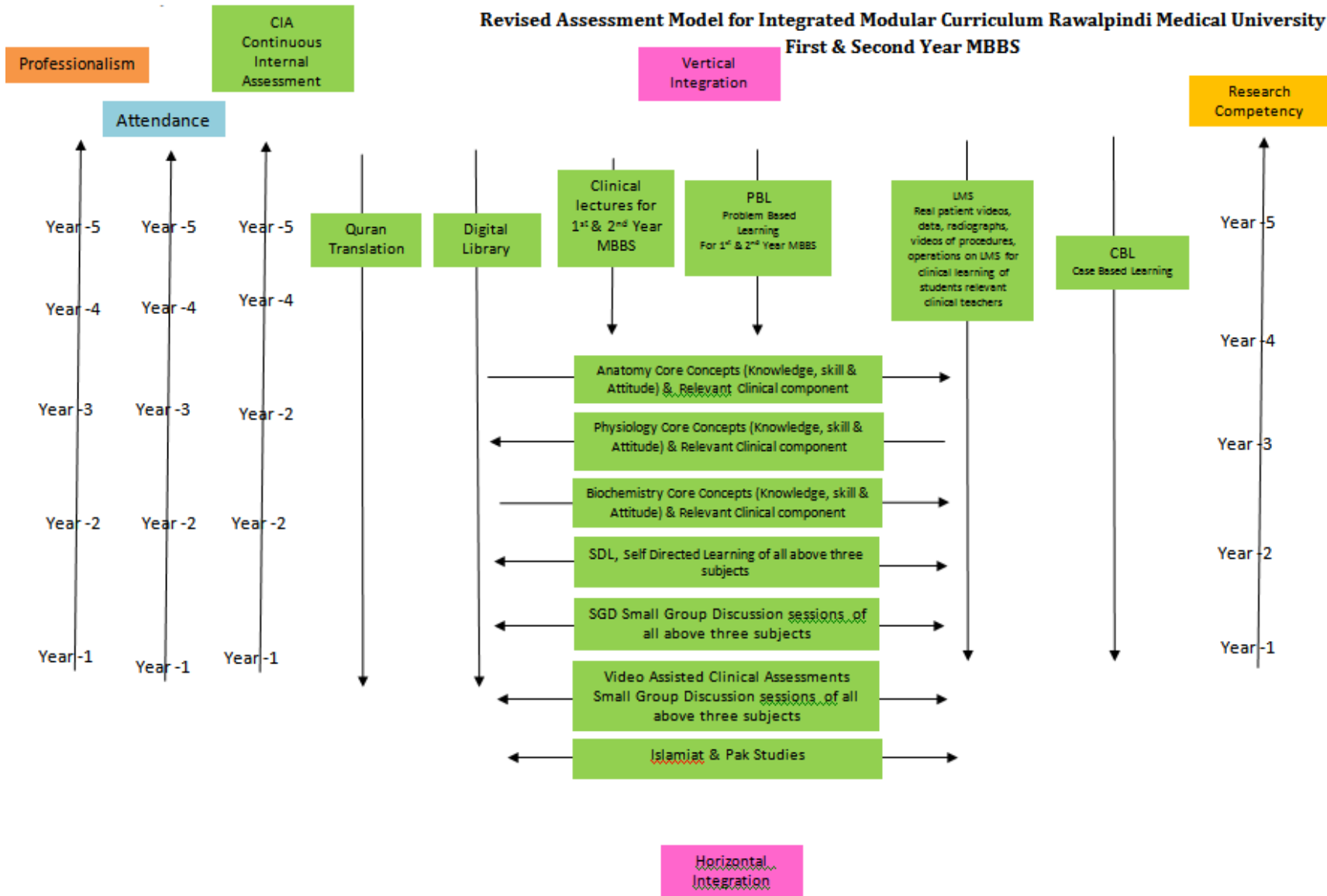
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I. Diagrammatic Presentation of Various Components of Clinically Oriented Integrated Modular Curriculum of Rawalpindi Medical University



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 - 74%	*75 - 80%	81 - 100%

*75% is eligibility criteria for appearing in professional examination.

II. Details of Teaching Hours for the subject of Physiology, Anatomy & Biochemistry as per Pakistan Medical Commission (PMC) Guidelines 2022:

Reference: Guidelines for Undergraduates Medical Education Curriculum (MBBS) 2022 (Section-II Clause 2.4)

Web reference: [https://www.pmc.gov.pk/Documents/Examinations/Guidelines%20for%20Undergraduate%20Medical%20Education%20Curriculum%20\(MBBS\).pdf](https://www.pmc.gov.pk/Documents/Examinations/Guidelines%20for%20Undergraduate%20Medical%20Education%20Curriculum%20(MBBS).pdf)

Subject	Details of Teaching Hours					
	Total	%	1 st Year MBBS	%	2 nd Year MBBS	%
Anatomy	500	41%	250	41%	250	41%
Physiology	450	37%	225	37%	225	37%
Biochemistry	250	22%	125	22%	125	22%
Total	1200	100%	600	100%	600	100%

III. Details of Marks Distribution for the subject of Physiology, Anatomy & Biochemistry:

Subject	Details of Marks Distribution					
	Total	%	1 st Year MBBS	%	2 nd Year MBBS	%
Anatomy	750	41%	375	41%	375	41%
Physiology	660	37%	330	37%	330	37%
Biochemistry	390	22%	195	22%	195	22%
Total	1800	100%	900	100%	900	100%

IV. Total Marks in Each Year (1st & 2nd Year MBBS) for the subject of Physiology, Anatomy & Biochemistry:

Subject	Total marks	70% (Final Exam)	30 % (Continuous Internal Assessment)
Anatomy	375	263 (262.5)	112 (112.5)
Physiology	330	231	99
Biochemistry	195	137 (136.5)	58 (58.5)

V. Block wise distribution of Continuous Internal Assessment C.I.A (30%) three Subjects every year

Subject	Total marks	Block -I	Block -II	Block -III
Anatomy	112	37	37	38
Physiology	99	33	33	33
Biochemistry	58	19	19	20

VI. Module wise distribution of C.I.A (30%) three Subjects every year

Subject	Block -I		Block -II		Block -III		Total marks
	Module - 1	Module - 2	Module - 3	Module -4	Module - 5	Module - 6	
Anatomy	18.5	18.5	18.5	18.5	19	19	112
Physiology	16.5	16.5	16.5	16.5	16.5	16.5	99
Biochemistry	9.5	9.5	9.5	9.5	10	10	58

1. SECTION- A

Details of Assessment of Physiology First Year MBBS

1.1 No. of Assessments of Physiology for First Year MBBS (Block- I):

Block	Sr. #	Module – 1 Foundation Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block - I	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	20 Minutes	2 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours			5 Assessments	
	Sr. #	Module – 2 MSK-I Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	20 Minutes	2 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
5	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes Physiology 12 minutes)						
6	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
7	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 05 Minutes			7 Assessments		

1.2 No. of Assessments of Physiology for First Year MBBS (Block- II):

Block	Sr. #	Module – 3 MSK-II Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block - II	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	20 Minutes	2 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours			5 Assessments	
	Sr. #	Module – 4 Blood & Immunity Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	20 Minutes	2 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
5	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes Physiology 12 minutes)						
6	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
7	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 05 Minutes			7 Assessments		

1.3 No. of Assessments of Physiology for First Year MBBS (Block- III):

Block	Sr. #	Module – 5 CVS Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block - III	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	20 Minutes	2 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours			5 Assessments	
	Sr. #	Module – 6 Respiration Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	20 Minutes	2 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
5	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes Physiology 12 minutes)						
6	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
7	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 05 Minutes			7 Assessments		

1.4 Total Time of Physiology Assessments for First Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
Foundation Module	2 Hours&40 minutes	20 Minutes	3 Hours
MSK-I Module	3 Hours &45 Minutes	20 Minutes	4 Hours &05 Minutes
MSK-II Module	2 Hours&40 minutes	20 Minutes	3 Hours
Blood & Immunity Module	3 Hours &45 Minutes	20 Minutes	4Hours &05 Minutes
CVS Module	2 Hours&40 minutes	20 Minutes	3 Hours
Respiration Module	3Hours &45 Minutes	20 Minutes	4Hours &05 Minutes
Send Up Examination	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
First Professional	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
Grand Total	26 Hours &45 Minutes	2 Hour	28 Hours & 45 Minutes

Total Teaching Hours vs Total Assessment Hours

	Grand Total Teaching Hours	Grand Total Assessment Hours
	225 hours:	28 Hours &45 Minutes
Ratio of Teaching Hours to Assessments Hours	8:1	

1.5 Distribution (Breakup) of Continuous Internal Assessment (CIA) marks among different components of a module in Physiology for First Year MBBS:

Components	Block - I		Total (33 marks)
	Module – I (16.5 marks)	Module – II (16.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	7	7	14
Structured & Clinically oriented Viva voce	5	5	10
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	16.5	16.5	33
Components	Block - II		Total (33 marks)
	Module – III (16.5 marks)	Module – IV (16.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	7	7	14
Structured & Clinically oriented Viva voce	5	5	10
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	16.5	16.5	33
Components	Block - III		Total (33 marks)
	Module – V (16.5 marks)	Module – VI (16.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	7	7	14
Structured & Clinically oriented Viva voce	5	5	10
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	16.5	16.5	33

1.6 List of Topics for Each Block for First Year MBBS

Block	Module Name	Domain
Block 1	Foundation module	Functional Organization of the Human Body and Control of the “Internal Environment
		The Cell and Its Functions
		Genetic Control of Protein Synthesis, Cell Function, and Cell Reproduction
		Transport of Substances Through the Cell Membrane
	Musculoskeletal-I module	Nerve physiology, membrane potential & action potential, Neuromuscular junction
Block 2	Musculoskeletal-II module	Contraction of Skeletal Muscle, Excitation of Skeletal Muscle
		Contraction and Excitation of Smooth Muscle
		Cardiac muscle, action potential and excitation contraction coupling in cardiac muscle, (chapter 9 Guyton & Hall 14 th edition, excluding cardiac cycle) Specialized excitatory and conductive system of the heart
		Comparison between Skeletal, Smooth & Cardiac Muscles
	Blood & Immunity module	Red Blood Cells, Anemia, and Polycythemia
		Resistance of the Body to Infection: I. Leukocytes, Granulocytes, the Monocyte-Macrophage System, and Inflammation
		Resistance of the Body to Infection: II. Immunity and Allergy
		Blood Types; Transfusion; Tissue and Organ Transplantation, Hemostasis and Blood Coagulation
		Skin & Temperature regulation
Block 3	CVS module	The Heart as a Pump and Function of the Heart Valves & regulation of heart pumping, cardiac cycle
		Electrocardiogram, its interpretation & its abnormalities
		Medical Physics of Pressure, Flow, and Resistance, Vascular Distensibility and Functions of the Arterial and Venous Systems
		Microcirculation and the Lymphatic System, Local and Humoral Control of Blood Flow by the Tissues
		Nervous Regulation of the Circulation, and Rapid & Long-Term Control of Arterial Pressure, hypertension
		Cardiac Output, Venous Return, and Their Regulation
		Muscle Blood Flow and Cardiac Output During Exercise; the Coronary & regional circulation
		Cardiac Failure, Circulatory Shock
	Heart Valves and Heart Sounds; Dynamics of Valvular and Congenital Heart Defects	
	Respiration module	Pulmonary Ventilation, Pulmonary Volumes and Capacities, Alveolar Ventilation, Functions of the Respiratory Passageways
		Pulmonary Circulation, Pulmonary Edema, Physical Principles of Gas Exchange; Diffusion of Oxygen and Carbon Dioxide Through the Respiratory Membrane
		Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids
		Regulation of Respiration
		Useful Methods for Studying Respiratory Abnormalities, Respiratory Insufficiency, Hypoxia & Oxygen Therapy, Hypercapnia & Artificial Respiration
		Respiratory changes during Exercise, Aviation, Space & Deep-Sea Diving Physiology

1.7 Physiology Table of Specification (TOS) for Theory Examination for First Year MBBS Modules during running academic session:

Sr. #	Modules	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Total Marks	Block Wise Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3		
1.	Foundation Module	20	12	6	2	4	20	1	2	1	40	90
2.	MSK-I Module	30	18	9	3	4	20	1	2	1	50	
3.	MSK-II Module	30	18	9	3	4	20	1	2	1	50	100
4.	Blood & Immunity Module	30	18	9	3	4	20	1	2	1	50	
5.	CVS Module	40	24	12	4	4	20	1	2	1	60	110
6.	Respiration Module	30	18	9	3	4	20	1	2	1	50	
Grand Total											300	

1.8 Table of specification for OSPE First Year MBBS during running academic session:

Sr. No	Block	Topic	Knowledge (C1, C2, C3)	Skill (P3)	Attitude (A3)	Station No.	Marks
1.	Block – I (Foundation & MSK-I)	Introduction to compound microscope	30%	50%	20%	1 A	1.5
2.		Apparatus identification (Introduction to Neubauer's chamber, Red Blood Cell (RBC) pipettes & White Blood Cell (WBC) pipette)				1 B	1.5
3.		Introduction to Wintrobe & Westergren tube				2 A	1.5
4.		Determination of Hematocrit (HCT)				2 B	1.5
5.		Apparatus identification (Introduction to centrifuge machine)				3	3
6.		Determination of Hemoglobin concentration				4	3
7.		Determination of Erythrocyte Sedimentation Rate (ESR)				5	3
8.		Practical note book / sketch copy				6	3
						Total	18
1.	Block – II (MSK-II & Blood Module)	Determination of Total leukocyte Count (TLC)	30%	50%	20%	1 A	1
2.		Estimation of Red Blood Cell (RBC) count				1 B	1
3.		Determination of platelet count				1 C	1
4.		Determination of Differentiate leukocyte Count (DLC)				2	3
5.		Determination of ABO blood groups				3 A	1.5
6.		Determination of Rh blood groups				3 B	1.5
7.		Determination of Clotting Time (CT)				4 A	1.5
8.		Determination of Bleeding Time (BT)				4 B	1.5
9.		Recording of body temperature				5 A	1.5
10.		Demonstration of Triple response				5 B	1.5
11.		Practical note book / sketch copy				6	3
						Total	18
1.	Block – III (CVS & Respiration Module)	Determination of arterial pulse	30%	50%	20%	1 A	1.5
2.		Determination of Jugular Venous Pulse (JVP)				1 B	1.5
3.		Clinical examination of chest for CVS				2 A	1
4.		Clinical examination of chest for respiration				2 B	1
5.		Cardio Pulmonary Resuscitation (CPR)				2 C	1
6.		Determination of Blood Pressure (BP)				3 A	1.5
7.		Effect of exercise and posture on arterial blood pressure				3 B	1.5
8.		Recording of electrocardiography (ECG)				4	3

9.		Measurement of different lung volume and capacities with help of spirometer				5 A	1.5
10.		Recording of normal and modified movement of respiration (Stethography)				5 B	1.5
11.		Practical note book / sketch copy				6	3
						Total	18

2. SECTION - B

Details of Assessment of Physiology Second Year MBBS

2.1 No. of Assessments of Physiology for Second Year MBBS (Block-I):

Block	Sr. #	Module – 1 GIT Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block - I	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	20 minutes	2 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours			5 Assessments	
	Sr. #	Module – 2 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	20 minutes	2 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes Physiology 12 minutes)					
6	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
7	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 05 Minutes			7 Assessments		

2.2 No. of Assessments of Physiology for Second Year MBBS (Block-II):

Block	Sr. #	Module – 3 Reproduction Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block - II	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	20 minutes	2 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours			5 Assessments	
	Sr. #	Module – 4 CNS Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	20 minutes	2 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
5	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes Physiology 12 minutes)						
6	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
7	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 05 Minutes			7 Assessments		

2.3 No. of Assessments of Physiology for Second Year MBBS (Block-III):

Block	Sr. #	Module – 5 Special Senses Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block - II	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	20 minutes	2 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours			5 Assessments	
	Sr. #	Module – 6 Endocrinology Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	20 minutes	2 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes Physiology 12 minutes)					
	6	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes					
7	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 05 Minutes			7 Assessments		

2.4 Total Time of Physiology Assessments for Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module	2 Hours & 40 minutes	20 Minutes	3 Hours
Renal Module	3 Hours & 45 Minutes	20 Minutes	4 Hours & 05 Minutes
Reproduction Module	2 Hours & 40 minutes	20 Minutes	3 Hours
CNS Module	3 Hours & 45 Minutes	20 Minutes	4 Hours & 05 Minutes
Special Senses Module	2 Hours & 40 minutes	20 Minutes	3 Hours
Endocrinology Module	3 Hours & 45 Minutes	20 Minutes	4 Hours & 05 Minutes
Send Up Examination	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
First Professional	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
Grand Total	26 Hours & 45 Minutes	2 Hour	28 Hours & 45 Minutes

Total Teaching Hours vs Total Assessment Hours

	Grand Total Teaching Hours	Grand Total Assessment Hours
	225 hours:	28 Hours & 45 Minutes
Ratio of Teaching Hours to Assessments Hours	8:1	

2.5 Distribution (Breakup) of Continuous Internal Assessment (CIA) marks among different components of a module in Physiology for Second Year MBBS:

Components	Block - I		Total (33 marks)
	Module – I (16.5 marks)	Module – II (16.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	7	7	14
Structured & Clinically oriented Viva voce	5	5	10
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	16.5	16.5	33
Components	Block - II		Total (33 marks)
	Module – III (16.5 marks)	Module – IV (16.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	7	7	14
Structured & Clinically oriented Viva voce	5	5	10
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	16.5	16.5	33
Components	Block - III		Total (33 marks)
	Module – V (16.5 marks)	Module – VI (16.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	7	7	14
Structured & Clinically oriented Viva voce	5	5	10
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	16.5	16.5	33

2.6 List of Topics for Each Block for Second Year MBBS

Block	Module	Topics
Block – I	GIT module	General Principles of Gastrointestinal Function—Motility, Nervous Control, and Blood Circulation,
		Propulsion and Mixing of Food in the Alimentary Tract
		Secretory Functions of the Alimentary Tract&Digestion and Absorption in the Gastrointestinal Tract
		Physiology of Gastrointestinal Disorders
	Renal Module	The Body Fluid Compartments: Extracellular and Intracellular Fluids; Edema
Urine Formation by the Kidneys: Glomerular Filtration, Renal Blood Flow, and Their Control, Tubular Reabsorption and Secretion		
Urine Concentration and Dilution; Regulation of Extracellular Fluid Osmolarity and Sodium Concentration		
Renal Regulation of Potassium, Calcium, Phosphate, and Magnesium; Integration of Renal Mechanisms for Control of Blood Volume and Extracellular Fluid VolumeAcid-Base Regulation		
Diuretics, Kidney Diseases		
Block – II	Reproduction Module	Reproductive and Hormonal Functions of the Male (and Function of the Pineal Gland)
		Female Physiology Before Pregnancy and Female Hormones
		Pregnancy and Lactation
		Fetal and Neonatal Physiology
	CNS Module	Organization of the Nervous System, Basic Functions of Synapses, and Neurotransmitters
		Sensory Receptors, Neuronal Circuits for Processing Information
		Somatic Sensations: I. General Organization, the Tactile and Position Senses, Sensory pathways
		Somatic Sensations: II. Pain, Headache, and Thermal Sensations, and their pathways
		Motor Functions of the Spinal Cord; the Cord Reflexes
		Cortical and Brain Stem Control of Motor Function and vestibular sensation & maintenance of equilibrium
		Contributions of the Cerebellum and Basal Ganglia to Overall Motor Control
		Cerebral Cortex, Intellectual Functions of the Brain, Learning, and Memory
		Behavioral and Motivational Mechanisms of the Brain—The Limbic System and the Hypothalamus
		States of Brain Activity—Sleep, Brain Waves, Epilepsy, Psychoses
The Autonomic Nervous System and the Adrenal Medulla		
Cerebral Blood Flow, Cerebrospinal Fluid, and Brain Metabolism		
Block – III	Special Senses Module	The Eye: I. Optics of Vision
		The Eye: II. Receptor and Neural Function
		The Eye: III. Central Neurophysiology of V
		The Sense of Hearing
		The Chemical Senses - Taste and Smell
	Endocrinology Module	Introduction to Endocrinology
		Pituitary Hormones and Their Control by the Hypothalamus
		Thyroid Metabolic Hormones
		Adrenocortical Hormones
Insulin, Glucagon, and Diabetes Mellitus		

2.7 Physiology Table of Specification (TOS) for Theory Examination for Second Year MBBS Modules during running academic session:

Sr. #	Modules	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Total Marks	Block Wise Total Marks	CIA
			C1	C2	C3	No. of items	Marks	C1	C2	C3			
1.	GIT Module	20	12	6	2	4	20	1	2	1	40	90	
2.	Renal Module	30	18	9	3	4	20	1	2	1	50		
3.	Reproduction Module	30	18	9	3	4	20	1	2	1	50	110	
4.	CNS Module	40	24	12	4	4	20	1	2	1	60		
5.	Special Senses Module	30	18	9	3	4	20	1	2	1	50	100	
6.	Endocrinology Module	30	18	9	3	4	20	1	2	1	50		
Grand Total											300		

2.8 Table of specification for OSPE Second Year MBBS during running academic session:

Sr. No	Block	Topics	Knowledge (C1, C2, C3)	Skill (P3)	Attitude (A3)	Station No.	Marks
1.	Block – I (GIT & Renal)	Examination of sense of taste	30%	50%	20%	1	3
2.		Examination of sense of smell				2	3
3.		Examination of superficial reflexes				3	3
4.		Examination of deep reflexes				4	3
5.		Estimation of specific gravity of urine				5	3
6.		Practical note book / sketch copy				6	3
						Total	18
1.	Block – II (Reproduction & CNS Module)	Examination of sensory system	30%	50%	20%	1	3
2.		Examination of motor system				2	3
3.		Examination of cerebellar functions				3	3
4.		Examination of cranial nerves				4	3
5.		Performance of pregnancy test				5	3
6.		Practical note book / sketch copy				6	3
						Total	18
1.	Block – III (Special Senses & Endocrinology)	Performance of hearing test / vestibular functions (VIII nerve)	30%	50%	20%	1	3
2.		Determination of field of vision				2	3
3.		Estimation of visual acuity				3	3
4.		Examination pupillary reactions / Eye movements (III, IV, VI nerves)				4	3
5.		Checking for color vision				5 A	1.5
6.		Ophthalmoscopy				5 B	1.5
7.		Practical note book / sketch copy				6	3
						Total	18

3. SECTION - C

Details of Assessment of Anatomy First Year MBBS

3.1 No. of Assessments of Anatomy for First Year MBBS (Block-I):

Block	Sr #	Module – 1 Foundation Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-I	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	30 Minutes	3 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours & 10 Minutes			6 Assessments	
	Sr. #	Module – 2 MSK-I Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
	Assessment Time	Summative Assessment Time	Formative Assessment Time						
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	30 Minutes	3 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
6	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) *	Summative	Combined 35 Minutes (Anatomy 12 minutes)						
Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE									
7	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
8	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 15 Min			8 Assessments		

*18 minutes for gross OSPE anatomy will be included in time calculation of the assessment in the subject of anatomy in the next section.

3.2 No. of Assessments of Anatomy for First Year MBBS (Block-II)

Block	Sr #	Module – 3 MSK-II Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-II	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	30 Minutes	3 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours & 10 Minutes			6 Assessments	
	Sr. #	Module – 4 Blood & Immunity Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	30 Minutes	3 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
6	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) *	Summative	Combined 35 Minutes (Anatomy 12 minutes)						
Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE									
7	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
8	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 15 Min			8 Assessments		

*18 minutes for gross OSPE anatomy will be included in time calculation of the assessment in the subject of anatomy in the next section.

3.3 No. of Assessments of Anatomy for First Year MBBS (Block-III):

Block	Sr #	Module – 5 CVS Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-III	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	30 Minutes	3 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours & 10 Minutes			6 Assessments	
	Sr. #	Module – 6 Respiration Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
	Assessment Time	Summative Assessment Time	Formative Assessment Time						
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	30 Minutes	3 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
6	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) *	Summative	Combined 35 Minutes (Anatomy 12 minutes)						
Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE									
7	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
8	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 15 Min			8 Assessments		

*18 minutes for gross OSPE anatomy will be included in time calculation of the assessment in the subject of anatomy in the next section.

3.4 Total Time of Anatomy Assessments for First Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
Foundation Module	2 Hours&40 minutes	30 Minutes	3 Hours&10 minutes
MSK-I Module	3 Hours &45 Minutes	30 Minutes	4 Hours&15 minutes
MSK-II Module	2 Hours&40 minutes	30 Minutes	3 Hours& 10 minutes
Blood & Immunity Module	3 Hours &45 Minutes	30 Minutes	4 Hours&15 minutes
CVS Module	2 Hours&40 minutes	30 Minutes	3 Hours& 10 minutes
Respiration Module	3 Hours &45 Minutes	30 Minutes	4 Hours&15 minutes
*Send Up Examination	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
*First Professional	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
Grand Total	26 Hours &45 Minutes	3 Hours	29 Hours &45 Minutes

Total Teaching Hours vs Total Assessment Hours

	Grand Total Teaching Hours	Grand Total Assessment Hours
	250 hours:	29 Hours & 45 Minutes
Ratio of Teaching Hours to Assessments Hours	8:1	

3.5 Distribution (Breakup) of Continuous Internal Assessment (CIA) marks among different components of a module in Anatomy for First Year MBBS:

Components	Block - I		Total (37 marks)
	Module – I (18.5 marks)	Module – II (18.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	8	8	16
Structured & Clinically oriented Viva voce	6	6	12
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	18.5	18.5	37
Components	Block - II		Total (37 marks)
	Module – III (18.5 marks)	Module – IV (18.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	8	8	16
Structured & Clinically oriented Viva voce	6	6	12
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	18.5	18.5	37
Components	Block - III		Total (38 marks)
	Module – V (18.5 marks)	Module – VI (18.5 marks)	
Mid Module Examination LMS based assessments	1.5	1.5	3
End Module Examinations (SEQ & MCQs Based)	8	8	16
Structured & Clinically oriented Viva voce	6	6	12
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	19	19	38

3.6 List of Topics of Anatomy For Theory / Dissection Teaching First Year MBBS During Running Academic Session:

Block	Module Name	Domain
Block 1	Foundation module & Musculoskeletal-I module	<p>Gross Anatomy</p> <ul style="list-style-type: none"> • Bones and Joints of upper limb • Pectoral Region & Breast • Axillary Region • Bones and Joints of Arm, Forearm • Muscles and Neurovascular of Anterior Compartment of Arm • Muscles and Neurovascular of Posterior Compartment of Arm • Muscles and Neurovascular of Anterior Compartment of Forearm • Muscles and Neurovascular of Posterior Compartment of Forearm • Muscles and Neurovascature of Hand • Radiology of Upper Limb <p>Embryology</p> <ul style="list-style-type: none"> • Development of Fertilisation to Eighth Week • Development of Placenta, foetal membranes, Multiple pregnancy and estimation of fetal age. <p>Histology</p> <ul style="list-style-type: none"> • Microscopic anatomy of Epithelia • Microscopic anatomy of Connective Tissue
Block 2	Musculoskeletal-II module & Blood & Immunity module	<p>Gross Anatomy</p> <ul style="list-style-type: none"> • Bones and Joints of Hip and thigh Region • Muscles and Neurovascular of Hip • Muscles and Neurovascular of Anterior and medial Compartment of Thigh • Muscles and Neurovascular of Posterior Compartment of Thigh • Bones and Joints of knee and leg • Muscles and Neurovascular of Anterior Compartment of Leg • Muscles and Neurovascular of Lateral and Posterior Compartment • Bones and Joints of ankle and Foot • Muscles and Neurovascular of Foot • Radiology of Lower Limb <p>Embryology</p> <ul style="list-style-type: none"> • Development of Musculoskeletal System, vertebral column and limbs

		<ul style="list-style-type: none"> • Development of Lymphoid Organs <p>Histology</p> <ul style="list-style-type: none"> • Microscopic anatomy of muscle and skin • Microscopic anatomy of Lymphoid Organs •
Block 3	CVS module & Respiration module	<p><u>Gross Anatomy</u></p> <ul style="list-style-type: none"> • Anterior Thoracic wall • Posterior Thoracic wall • Mediastinum • Heart external features and Vasculature • Heart internal features atria • Heart internal features ventricles • Great Vessels and Azygos system • Thoracic aperture and diaphragm • Lung • Radiology of Thorax <p>Embryology</p> <ul style="list-style-type: none"> • Development of Heart • Development of Vasculature <p>Histology</p> <ul style="list-style-type: none"> • Microscopic anatomy of Heart • Microscopic anatomy of Vessels •

3.7 Anatomy TOS for Theory Examination for First Year Modules during running academic session:

Sr. #	Modules	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Block Wise Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3	
1	Foundation Module	25	15	5	5	5	25	1	2	2	50+50=100
2	MSK-I Module	25	15	5	5	5	25	1	2	2	
3	MSK-II Module	25	15	5	5	5	25	1	2	2	50+50=100
4	Blood & Immunity Module	25	15	5	5	5	25	1	2	2	
5	CVS Module	25	15	5	5	5	25	1	2	2	50+50=100
6	Respiration Module	25	15	5	5	5	25	1	2	2	
Grand Total										300	

3.8 TOS for OSPE First Year Modules during Running Academic Session (Gross OSPE)

Sr. # / Station No	Topics	Knowledge	Skill	Attitude	Marks
Block 1- Upper Limb					
1	Bones and Joints	30%	50%	20%	3
2	Pectoral Region & Breast				3
3	Axillary Region				3
4	Bones and Joints of Arm, Forearm				3
5	Muscles and Neurovascular of Anterior Compartment of Arm				3
6	Muscles and Neurovascular of Posterior Compartment of Arm				3
7	Muscles and Neurovascular of Anterior Compartment of Forearm				3
8	Muscles and Neurovascular of Posterior Compartment of Forearm				3
9	Muscles and Neurovascuature of Hand				3
10	Radiology of Upper Limb				3
Total					30
Block 2- Lower Limb					
1	Bones and Joints of Hip and thigh Region	30%	50%	20%	3
2	Muscles and Neurovascular of Hip				3
3	Muscles and Neurovascular of Anterior and medial Compartment of Thigh				3
4	Muscles and Neurovascular of Posterior Compartment of Thigh				3
5	Bones and Joints of knee and leg				3
6	Muscles and Neurovascular of Anterior Compartment of Leg				3
7	Muscles and Neurovascular of Lateral and Posterior Compartment				3
8	Bones and Joints of ankle and Foot				3
9	Muscles and Neurovascular of Foot				3
10	Radiology of Lower Limb				3
Total					30
Block 3- Thorax					
1	Anterior Thoracic wall				3
2	Posterior Thoracic wall				3
3	Mediastinum				3
4	Heart external features and Vasculature				3
5	Heart internal features atria				3
6	Heart internal features ventricles				3
7	Great Vessels and Azygos system				3
8	Thoracic aperture and diaphragm				3
9	Lung				3
10	Radiology of Thorax				3

Total 30**3.9 TOS for OSPE first year modules during running academic session (Integrated OSPE)**

Sr. # / Station No	Topics	Knowledge	Skill	Attitude	Marks
Block 1- Foundation and MSK-I					
1	Development of Fertilisation to Eighth Week	30%	50%	20%	3
2	Development of Placenta, foetal membranes, Multiple pregnancy and estimation of fetal age.				3
3	Microscopic anatomy of Epithelia				3
4	Microscopic anatomy of Connective Tissue				3
5	Practical Copy				3
Total					15
Block 2- MSK-II and Blood & Immunity					
1	Development of Musculoskeletal System, vertebral column and limbs	30%	50%	20%	3
2	Development of Lymphoid Organs				3
3	Microscopic anatomy of muscle and skin				3
4	Microscopic anatomy of Lymphoid Organs				3
5	Practical Copy				3
Total					15
Block 3- Thorax					
1	Development of Heart	30%	50%	20%	3
2	Development of Vasculature				3
3	Microscopic anatomy of Heart				3
4	Microscopic anatomy of Vessels				3
5	Practical Copy				3
Total					15

4. SECTION - D

Details of Assessment of Anatomy Second Year MBBS

4.1 No. of Assessments of Anatomy for Second Year MBBS (Block - I):

Block	Sr #	Module – 1 GIT Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-I	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	30 Minutes	3 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours & 10 Minutes			6 Assessments	
	Sr. #	Module – 2 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	30 Minutes	3 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
6	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes (Anatomy 12 minutes)						
7	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
8	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 15 Min			8 Assessments		

*18 minutes for gross OSPE anatomy will be included in time calculation of the assessment in the subject of anatomy in the next section.

4.2 No. of Assessments of Anatomy for Second Year MBBS (Block - II):

Block	Sr #	Module – 3 Reproduction Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-II	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	30 Minutes	3 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours & 10 Minutes			6 Assessments	
	Sr. #	Module – 4 CNS Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
	Assessment Time	Summative Assessment Time	Formative Assessment Time						
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	30 Minutes	3 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
6	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes (Anatomy 12 minutes)						
7	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
8	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 15 Min			8 Assessments		

*18 minutes for gross OSPE anatomy will be included in time calculation of the assessment in the subject of anatomy in the next section.

4.3 No. of Assessments of Anatomy for Second Year MBBS (Block - III):

Block	Sr #	Module – 5 Special Senses Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-III	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	30 Minutes	3 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours & 10 Minutes			6 Assessments	
	Sr. #	Module – 6 Endocrinology Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
	Assessment Time	Summative Assessment Time	Formative Assessment Time						
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	30 Minutes	3 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
6	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) *	Summative	Combined 35 Minutes (Anatomy 12 minutes)						
Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE									
7	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
8	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 15 Min			8 Assessments		

*18 minutes for gross OSPE anatomy will be included in time calculation of the assessment in the subject of anatomy in the next section.

4.4 Total Time of Anatomy Assessments for Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module	2 Hours&40 minutes	30 Minutes	3 Hours&10 minutes
Renal Module	3 Hours & 45 Minutes	30 Minutes	4 Hours& 15 minutes
Reproduction Module	2 Hours&40 minutes	30 Minutes	3 Hours& 10 minutes
CNS Module	3 Hours & 45 Minutes	30 Minutes	4 Hours& 15 minutes
Special Senses Module	2 Hours&40 minutes	30 Minutes	3 Hours& 10 minutes
Endocrinology Module	3 Hours & 45 Minutes	30 Minutes	4 Hours& 15 minutes
*Send Up Examination	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
*First Professional	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
Grand Total	26 Hours & 45 Minutes	3 Hours	29 Hours & 45 Minutes

Total Teaching Hours vs Total Assessment Hours

	Grand Total Teaching Hours	Grand Total Assessment Hours
	250 hours:	29 Hours & 45 Minutes
Ratio of Teaching Hours to Assessments Hours	8 :1	

4.5 Distribution (Breakup) of Continuous Internal Assessment (CIA) marks among different components of a module in Anatomy for Second Year MBBS:

Components	Block - I		Total (37 marks)
	Module – I (18.5 marks)	Module – II (18.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	8	8	16
Structured & Clinically oriented Viva voce	6	6	12
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	18.5	18.5	37
Components	Block - II		Total (37 marks)
	Module – III (18.5 marks)	Module – IV (18.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	8	8	16
Structured & Clinically oriented Viva voce	6	6	12
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	18.5	18.5	37
Components	Block - III		Total (38 marks)
	Module – V (18.5 marks)	Module – VI (18.5 marks)	
Mid Module Examination LMS based assessments	1.5	1.5	3
End Module Examinations (SEQ & MCQs Based)	8	8	16
Structured & Clinically oriented Viva voce	6	6	12
OSPE	3	3	6
Video Assisted Assessment	0.5	0.5	1
Total	19	19	38

4.6 List of Topics of Anatomy for Second Year MBBS during running academic session:

Block	Module Name	Domain
Block 1	GIT Module	<p><u>GIT Module</u></p> <ul style="list-style-type: none"> • <u>Gross Anatomy</u> Bones, Joints, Muscles, Neurovasculature of anterior abdominal wall; Peritoneum; Viscera of the gastrointestinal tract (esophagus, stomach, small and large intestines, anal canal) and associated viscera (liver, gall bladder, biliary apparatus and pancreas); associated clinical correlates. • <u>Histology</u> Microscopic Anatomy of viscera of the gastrointestinal tract (esophagus, stomach, small and large intestines, anal canal) and associated viscera (liver, gall bladder, biliary apparatus and pancreas); associated clinical correlates. • <u>Embryology</u> Development of viscera of the gastrointestinal tract (esophagus, stomach, small and large intestines, anal canal) and associated viscera (liver, gall bladder, biliary apparatus and pancreas); associated clinical correlates.
	Renal Module	<p><u>Renal Module</u></p> <ul style="list-style-type: none"> • <u>Gross Anatomy</u> Bones, Joints, Muscles, Neurovasculature of posterior abdominal wall; Viscera of the renal system i.e. kidney, ureter, urinary bladder and urethra; associated clinical correlates. • <u>Histology</u> Microscopic Anatomy of kidney, ureter, urinary bladder and urethra; associated clinical correlates. • <u>Embryology</u> Development of kidney, ureter, urinary bladder and urethra; associated clinical correlates.
Block 2	Reproduction Module	<p><u>Reproduction Module</u></p> <ul style="list-style-type: none"> • <u>Gross Anatomy</u> Bones, Joints, Muscles, Neurovasculature of male and female perineum; Structures of the male reproductive (testes, epididymis, vas deference, prostate, seminal vesicles, bulbourethral glands) and female reproductive system (ovaries, fallopian tube, uterus, vagina); associated clinical correlates. • <u>Histology</u> Microscopic Anatomy of male reproductive system (testes, epididymis, vas deference, prostate, seminal vesicles, bulbourethral glands) and female reproductive system (ovaries, fallopian tube, uterus, vagina); associated clinical correlates. • <u>Embryology</u> Development of male reproductive system (testes, epididymis, vas deference, prostate, seminal vesicles, bulbourethral glands) and female reproductive system (ovaries, fallopian tube, uterus, vagina); associated clinical correlates.
	CNS Module	<p><u>CNS Module</u></p> <ul style="list-style-type: none"> • <u>General anatomy</u>

		<p>General organization of central and peripheral nervous system and Autonomic nervous systems.</p> <ul style="list-style-type: none"> • <u>Gross Anatomy</u> Skull (Cranial fossae) and Meninges; Structures and tracts of the Spinal Cord and Brain (brain stem, cerebellum, diencephalon, cerebral hemispheres); Ventricles of the brain and cerebrospinal fluid; Blood supply of brain; Cranial nerves; associated clinical correlates. • <u>Histology</u> Microscopic Anatomy of the Neurons, neuroglia, Spinal Cord and Brain (cerebrum and cerebellum); associated clinical correlates. • <u>Embryology</u> Development of Spinal Cord, Brain (Forebrain, midbrain and hindbrain) and peripheral nervous system; associated clinical correlates.
Block 3	Special Senses Module	<p><u>Special Senses Module</u></p> <ul style="list-style-type: none"> • <u>Gross Anatomy</u> Skull, face, scalp, temporal, parotid and mandibular regions; Structure of Eye and Ear; associated clinical correlates. • <u>Histology</u> Microscopic Anatomy of Eye (conjunctiva, corneal, sclera, uveal tract, retina) and ear (external ear, middle ear, vestibular apparatus, cochlea); associated clinical correlates. • <u>Embryology</u> Development of pharyngeal apparatus, face, nose, tongue, eye and ear; associated clinical correlates.
	Endocrinology Module	<p><u>Endocrine Module</u></p> <ul style="list-style-type: none"> • <u>Gross Anatomy</u> Bones, Joints, Muscles, Neurovasculature of neck; associated clinical correlates. • <u>Histology</u> Microscopic Anatomy of pituitary, pineal, thyroid, parathyroid and adrenal glands; associated clinical correlates. • <u>Embryology</u> Development of pituitary, pineal, thyroid, parathyroid and adrenal glands; associated clinical correlates.

4.7 Anatomy TOS for Theory Examination for Second Year Modules during running academic session:

Sr. #	Modules	No of MCQs (%)	No of MCQs according to cognitive domain			No of SEQs (%)		No of SEQs according to cognitive domain			Block Wise Total Marks
			C1	C2	C3	No of items	Marks	C1	C2	C3	
1	GIT	25	15	5	5	5	25	1	2	2	50+50=100
2	Renal	25	15	5	5	5	25	1	2	2	
3	Reproduction	25	15	5	5	5	25	1	2	2	50+50=100
4	CNS	25	15	5	5	5	25	1	2	2	
5	Special Senses	25	15	5	5	5	25	1	2	2	50+50=100
6	Endocrinology	25	15	5	5	5	25	1	2	2	
Grand Total										300	

4.8 Table of specification for Second Year MBBS during running academic session (For Integrated OSPE):

Sr. # / Station No	Topics	Knowledge	Skill	Attitude	Marks
Block 1- GIT & Renal					
1	Development of Gastrointestinal Tract	30%	50%	20%	3
2	Development of Renal System				3
3	Microscopic anatomy of Gastrointestinal Tract				3
4	Microscopic anatomy of Renal System				3
5	Practical Copy				3
Total					15
Block 2- Reproduction & CNS					
1	Development of Reproductive System	30%	50%	20%	3
2	Development of Nervous System				3
3	Microscopic anatomy of Reproductive System				3
4	Microscopic anatomy of Nervous System				3
5	Practical Copy				3
Total					15
Block 3- Endocrinology & Special Senses					
1	Development of Endocrine Organs	30%	50%	20%	3
2	Development of Special Senses				3
3	Microscopic anatomy of Endocrine Organs				3
4	Microscopic anatomy of Special Senses				3
5	Practical Copy				3
Total					15

4.9 Table of specification for OSPE Second Year MBBS during running academic session (Gross OSPE):

Sr. # / Station No	Topics	Knowledge	Skill	Attitude	Marks
Block 1- Abdomen					
1	Anterior Abdominal Wall	30%	50%	20%	3
2	Stomach				3
3	Liver and gall bladder				3
4	Intestines				3
5	Lumbar Vertebrae				3
6	Posterior Abdominal Wall				3
7	Kidney and Ureter				3
8	Urinary Bladder				3
9	Rectum and Anal Canal				3
10	Radiology of Abdomen				3
Total					30
Block 2- Pelvis and Brain					
1	Bones of pelvis	30%	50%	20%	3
2	Structures of Male pelvis				3
3	Structures of Female pelvis				3
4	External genitalia				3
5	Radiology of Pelvis				3
6	Meningies				3
7	Brain Stem and cerebellum				3
8	Diencephalon and telencephalon				3
9	Cranial fossae				3
10	Radiology of Skull (cranial fossae)				3
Total					30
Block 3- Neck and Special Senses					
1	Bones of Neck	30%	50%	20%	3
2	Submandibular region				3
3	Anterior Triangles of Neck				3
4	Posterior Triangle of neck				3
5	Radiology of the neck				3
6	Eye				3
7	Ear				3
8	Nose and paranasal sinuses				3
9	Trachea and Larynx				3
10	Radiology of Skull (Special senses)				3

5. SECTION - E

Details of Assessment of Biochemistry First Year MBBS

5.1 No. of Assessments of Biochemistry for First Year MBBS (Block-I):

Block	Sr. #	Module – 1 Foundation Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-I	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	20 Minutes	2 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours			5 Assessments	
	Sr. #	Module – 2 MSK-I Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 35 Minutes	20 Minutes	2 Formative	4 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes (Biochemistry 12 minutes)					
	5	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes					
6	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				3 Hours & 55 Minutes			6 Assessments		

5.2 No. of Assessments of Biochemistry for First Year MBBS (Block-II):

Block	Sr. #	Module – 3 MSK-II Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-II	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 30 minutes	20 Minutes	2 Formative	2 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	No Viva	-	-					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				2 Hours 50 Minutes			4 Assessments	
	Sr. #	Module – 4 Blood & Immunity Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	20 Minutes	2 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes (Biochemistry) 12 minutes)					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	6	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes					
7	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 05 Minutes			7 Assessments		

5.3 No. of Assessments of Biochemistry for First Year MBBS (Block-III):

Block	Sr. #	Module – 5 CVS Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-III	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 30 minutes	20 Minutes	2 Formative	2 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	No Viva	-	-					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				2 Hours 50 Minutes			4 Assessments	
	Sr. #	Module – 6 Respiration Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 35 Minutes	20 Minutes	2 Formative	4 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes (Biochemistry 12 minutes)					
	5	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
Total				3 Hours & 55 Minutes			6 Assessments		

5.4 Total Time of Biochemistry Assessments for First Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
Foundation Module	2 Hours & 40 minutes	20 Minutes	3 Hours
MSK-I Module	3 Hours & 35 Minutes	20 Minutes	3 Hours & 55 Minutes
MSK-II Module	2 Hours & 30 minutes	20 Minutes	2 Hours & 50 minutes
Blood Module	3 Hours & 45 Minutes	20 Minutes	4 Hours & 05 Minutes
CVS Module	2 Hours & 30 minutes	20 Minutes	2 Hours & 50 minutes
Respiration Module	3 Hours & 35 Minutes	20 Minutes	3 Hours & 55 Minutes
Send Up Examination	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
First Professional	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
Grand Total	26 Hours & 05 Minutes	2 hours	28 Hours & 05 Minutes

Total Teaching Hours vs Total Assessment Hours

	Grand Total Teaching Hours	Grand Total Assessment Hours
	125 hours:	28 Hours & 05 Minutes
Ratio of Teaching Hours to Assessments Hours	4:1	

5.5 Distribution (Breakup) of Continuous Internal Assessment (CIA) marks among different components of a module in Biochemistry for First Year MBBS:

Components	Block - I		Total (19 marks)
	Module – I (9.5 marks)	Module – II (9.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	5.5	5.5	11
Structured & Clinically oriented Viva voce	-	-	-
OSPE	2	2	4
Video Assisted Assessment	1	1	2
Total	9.5	9.5	19
Components	Block - II		Total (19 marks)
	Module – III (9.5 marks)	Module – IV (9.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	5.5	5.5	11
Structured & Clinically oriented Viva voce	-	-	-
OSPE	2	2	4
Video Assisted Assessment	1	1	2
Total	9.5	9.5	19
Components	Block - III		Total (20 marks)
	Module – V(10 marks)	Module – VI (10 marks)	
Mid Module Examination LMS based assessments	1.5	1.5	3
End Module Examinations (SEQ & MCQs Based)	5.5	5.5	11
Structured & Clinically oriented Viva voce	-	-	-
OSPE	2	2	4
Video Assisted Assessment	1	1	2
Total	10	10	20

5.6 List of Topics of Biochemistry for theory First Year MBBS during running academic session:

Block	Module	Topics
Block - I	Foundation	<ul style="list-style-type: none"> • Introduction to laboratory techniques and precautions while working in the laboratory • Demonstrate mechanism of surface tension • Demonstrate process of adsorption • Demonstrate effects of solutions of different tonicity on red cells
	MSK I	<ul style="list-style-type: none"> • Estimate the level of calcium • Estimate the level of vitamin C • Perform the color tests for the detection of amino acids
Block - II	MSK II	<ul style="list-style-type: none"> • Perform the color tests for the detection of proteins • Separate proteins by precipitation reactions (precipitation by full and half saturation with ammonium sulphate) • Separate proteins by Chromatography
	Blood	<ul style="list-style-type: none"> • Demonstrate use of photometer and spectrophotometer • Demonstrate use of pH meter, centrifuge machine and flame photometer • Illustrate method and precautions to draw blood • Describe preparation, shape and clinical significance of hemin crystals • Describe principal, method, normal blood level and clinical significance of serum proteins • Perform estimation of serum bilirubin
Block - III	CVS	<ul style="list-style-type: none"> • Describe Physical and chemical properties of lipids (solubility, saponification Emulsification and Acrolein test) • Illustrate detection of cholesterol and shape of cholesterol crystals • Perform Tests for the detection of carbohydrates and reducing sugars (Molisch's, iodine and Benedict's tests) • Perform Tests for differentiation between Mono and disaccharides Aldo and keto sugars (Barford's and Salvinoff's test and hydrolysis of sucrose) • Perform Hydrolysis of starch • Perform Identification of individual sugar by formation of osazone (osazone tests)
	Respiration	<ul style="list-style-type: none"> • Illustrate Henderson Hasselbalch equation • Illustrate buffer actions and buffer zone

5.7 Biochemistry TOS for Theory Examination for First Year Modules during running academic session:

Sr. #	Modules	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			OSPE Marks	Block Wise Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3		
1	Foundation Module	20	10	9	1	3	15	0.5	1.5	-	10	55
2	MSK-I Module	10	5	4	1	3	15	-	1	-		
3	MSK-II Module	7	4	3	-	3	15	-	1	-	10	45
4	Blood & Immunity Module	13	7	5	1	3	15	0.5	1.5	-		
5	CVS Module	7	4	3	-	3	15	0.5	1.5	-	10	37
6	Respiration Module	5	3	2	-	3	15	-	1	-		
Grand Total											137	

5.8 Biochemistry Table of specification for OSPE First Year MBBS during running academic session:

Sr. No	Block	Topic	Knowledge	Skill	Attitude	Station No.	Marks
1.	Block – I (Foundation & MSK-I)	Adsorption	100%			1A	1
2.		Surface tension				1B	1
3.		Tonicity	100%			2A	1
4.		Introduction to glassware				2B	1
5.		Calcium estimation	100%			3	2
6.		Ascorbic estimation					
7.		Casein detection by isoelectric pH					
8.		Color test for amino acids(observed)					
9.		Practical note book		80%	20%	5	2
						Total	10
1.	Block – II (MSK-II & Blood Module)	Color test for amino acids(observed)		90%	10%	1	2
2.		Biuret test and ninhydrin	100%			2	2
3.		Quantitative estimation of serum total proteins					
4.		Heat coagulation					
5.		Paper chromatography	100%			3	2
6.		Blood draw technique					
7.		Quantitative estimation of serum bilirubin	100%			4	2
8.		Hemin crystal					
9.		instruments					
10.		Practical note book		80%	20%	5	2
						Total	10
1.	Block – III (CVS & Respiration Module)	Molisch's test		90%	10%	1	2
2.		Iodine test	100%			2	2
3.		Benedict's test					
4.		Selvinoff's test					
5.		Lipid solubility	100%			3	2
6.		Emulsification					
7.		Acrolein test	100%			4	2
8.		buffers					
9.		Practical note book							80%	20%	5	2
						Total	10

6. SECTION – F

Details of Assessment of Biochemistry Second Year MBBS

6.1 No. of Assessments of Biochemistry for Second Year MBBS (Block-I):

Block	Sr. #	Module – 1 GIT Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-I	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 40 minutes	20 Minutes	2 Formative	3 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				3 Hours			5 Assessments	
	Sr. #	Module – 2 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 35 Minutes	20 Minutes	2 Formative	4 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes (Biochemistry 12 minutes)					
	5	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
Total				3 Hours & 55 Minutes			6 Assessments		

6.2 No. of Assessments of Biochemistry for Second Year MBBS (Block-II):

Block	Sr. #	Module – 3 Reproduction Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-II	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 30 minutes	20 Minutes	2 Formative	2 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	No Viva	-	-					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	6	Quran translation (MS team / Viva voce)	Formative	10 Minutes					
	7	Research club activity	Formative	30 Minutes					
	Total				2 Hours 50 minutes			4 Assessments	
	Sr. #	Module – 4 CNS Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 45 Minutes	20 Minutes	2 Formative	5 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module -I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes (Biochemistry 12 minutes)					
	5	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
6	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes						
7	Assessment of Clinical Lectures	Formative	10 Minutes						
Total				4 Hours & 05 Minutes			7 Assessments		

6.3 No. of Assessments of Biochemistry for Second Year MBBS (Block-III):

Block	Sr. #	Module – 5 Special Senses Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block-III	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	2 Hours & 30 minutes	20 Minutes	2 Formative	2 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	No Viva	-	-					
	5	Assessment of Clinical Lectures	Formative	10 Minutes					
	Total				2 Hours & 50 Minutes			4 Assessments	
	Sr. #	Module – 6 Endocrinology Module Components	Type of Assessments	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
	1	Mid Module (when 2/3 rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	30 Minutes	3 Hours & 35 Minutes	20 Minutes	2 Formative	4 Summative	
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	10 Minutes					
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours					
	4	Day-1 integrated OSPE with Anatomy (embryo & histo) & Biochemistry total 15 station, 5 for each subject (50% content of Module –I & 50% content of Module-2) at 3 venues simultaneously Day-2 OSPE Gross Anatomy (total 9 stations) * Note: the both batches will switch between integrated OSPE/Gross anatomy OSPE	Summative	Combined 35 Minutes (Biochemistry 12 minutes)					
	5	Integrated Clinically Video Assisted Assessment (10 items, 4 Physiology, 4 Anatomy 2 Biochemistry) 50% from both modules)	Summative	30 minutes					
	6	Assessment of Clinical Lectures	Formative	10 Minutes					
Total				3 Hours & 55 Minutes			6 Assessments		

6.4 Total Time of Biochemistry Assessments for Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module	2 Hours&40 minutes	20 Minutes	3 Hours
Renal Module	3 Hours &35 Minutes	20 Minutes	3 Hours &55 Minutes
Reproduction Module	2 Hours&30 minutes	20 Minutes	2 Hours 50 minutes
CNS Module	3 Hours & 45 Minutes	20 Minutes	4 Hours &05 Minutes
Special Senses Module	2 Hours&30 minutes	20 Minutes	2 Hours &50 Minutes
Endocrinology Module	3 Hours &35 Minutes	20 Minutes	3 Hours &55 Minutes
Send Up Examination	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
First Professional	3 Hours & 45 Minutes	.....	3 Hours & 45 Minutes
Grand Total	26 Hours &05 Minutes	2 hours	28 Hours &05 Minutes

Total Teaching Hours vs Total Assessment Hours

Ratio of Teaching Hours to Assessments Hours	Grand Total Teaching Hours	Grand Total Assessment Hours
	125 hours:	28 Hours &05 Minutes
4:1		

6.5 Distribution (Breakup) of Continuous Internal Assessment (CIA) marks among different components of a module in Biochemistry for Second Year MBBS:

Components	Block - I		Total (19 marks)
	Module – I (9.5 marks)	Module – II (9.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	5.5	5.5	11
Structured & Clinically oriented Viva voce	-	-	-
OSPE	2	2	4
Video Assisted Assessment	1	1	2
Total	9.5	9.5	19
Components	Block - II		Total (19 marks)
	Module – III (9.5 marks)	Module – IV (9.5 marks)	
Mid Module Examination LMS based assessments	1	1	2
End Module Examinations (SEQ & MCQs Based)	5.5	5.5	11
Structured & Clinically oriented Viva voce	-	-	-
OSPE	2	2	4
Video Assisted Assessment	1	1	2
Total	9.5	9.5	19
Components	Block - III		Total (20 marks)
	Module – V(10 marks)	Module – VI (10 marks)	
Mid Module Examination LMS based assessments	1.5	1.5	3
End Module Examinations (SEQ & MCQs Based)	5.5	5.5	11
Structured & Clinically oriented Viva voce	-	-	-
OSPE	2	2	4
Video Assisted Assessment	1	1	2
Total	10	10	20

6.6 List of Topics for Each Block for Second Year MBBS

Block	Module	Topics
Block – I	GIT module	1. Carbohydrate Metabolism
		2. Digestion & Absorption (GIT Hormones & Secretions also)
		3. Nutrition
		4. LFTs
		5. Protein Metabolism
	Renal Module	6. Water & Electrolytes
		7. Acid Base Imbalance
Block – II	Reproduction Module	1. Sex Hormones
	CNS Module	2. Nucleic Acid Metabolism
		3. Lipid Metabolism
Block – III	Special Senses Module	1. Receptors
		2. Signal Transduction
		3. Neurotransmitters
		4. Vitamin A
	Endocrinology Module	5. Endocrinology
		6. Calcium Balance
		7. Glucose Regulation

6.7 Biochemistry Table of Specification (TOS) for Theory Examination for Second Year MBBS Modules during running academic session:

Sr. #	Modules	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			OSPE Marks	Block Wise Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3		
1	GIT Module	18	9	8	1	2	15	0.5	1.5	-	10	55
2	Renal Module	12	6	5	1	1		-	0.5	0.5		
3	Reproduction Module	8	4	3	1	1	15	-	1	-	10	45
4	CNS Module	12	6	5	1	2		0.5	1.5	-		
5	Special Senses Module	5	3	2	-	1	15	-	1	-	10	37
6	Endocrinology Module	7	4	3	-	2		0.5	1.5	-		
Grand Total											137	

6.8 Biochemistry Table of specification for OSPE Second Year MBBS during running academic session:

Sr. No	Block	Topics	Knowledge	Skill	Attitude	Station No.	Marks
1.	Block – I (GIT & Renal)	Bile	100%			1	2
2.		Introduction to instruments					
3.		Quantitative estimation of Serum Alkaline Phosphatase (ALP) by spectrophotometer	100%			2	2
4.		Quantitative estimation of Serum Alanine Transaminase (ALT) by spectrophotometer					
5.		Urine analysis		90%	10%	3	2
6.		Urine report					
7.		Quantitative estimation of serum Urea	100%			4	2
8.		Quantitative estimation of Serum Creatinine					
9.		Practical note book		80%	20%	5	2
						Total	10
1.	Block – II (Reproduction & CNS Module)	Quantitative estimation of Serum Uric Acid	100%			1	2
2.		Quantitative estimation of Serum Cholesterol	100%			2	2
3.		Quantitative estimation of Serum HDL Cholesterol		90%	10%	3	2
4.		Quantitative estimation of Serum LDL Cholesterol					
5.		Quantitative estimation of Serum Triglycerides (TAG)	100%			4	2
6.		Practical note book		80%	20%	5	2
						Total	10
1.	Block – III (Special Senses & Endocrinology)	Glucose estimation	100%			1	2
2.		Glucose Tolerance Test (GTT)	100%			2	2
3.		PCR Electrophoresis	100%			3	2
4.		Hormonal Profile	100%			4	2
5.		Practical note book		80%	20%	5	2

6. Section: G

Details about Research, Quran Translation & Ethics

Details about Research, Quran Translation & Ethics for First Year MBBS

Sr. No	Domain	Professionalism / Ethics / Behavioral Sciences	Research	Islamic Studies	Quran Translation
1	Teachings hours per year	12 Hours	3 Hours	7 Hours	13 Hours
2	Teachings Method	Large Group Interactive Session (LGIS)	Large Group Interactive Session (LGIS) Research club activity	Large Group Interactive Session (LGIS)	Large Group Interactive Session (LGIS)
3	Assessment Method Summative Assessment	5% MCQs incorporated in MCQs paper of Anatomy, Biochemistry & Physiology separately in end module on campus exam (in all 6 modules) Structured viva with special marks for professionalism	5% MCQs incorporated in MCQs paper of Anatomy, Biochemistry & Physiology separately in end module on campus exam (in all 6 modules)	SEQ based exam at the end of academic year	1 SEQ based exam in every module
	Formative Assessment	MCQs based paper on MS teams	MCQs based paper on MS teams		
		Scoring sheet for skill lab (practical copy) with specific domain of professionalism Scoring sheet for SGD (sketch copy) with specific domain of professionalism			
4	Assessment Time	30 minutes	30 minutes	1 Hour	1 Hour
5	Ratio of Teaching Hours to Assessment Hours	24:1	6:1	7:1	13:1

Details about Research, Quran Translation & Ethics for Second Year MBBS

Sr. No	Domain	Professionalism / Ethics / Behavioral Sciences	Research	Pak Studies	Islamic Studies	Quran Translation
1	Teachings hours per year	4 Hours	2 Hours	16.5 Hours	8.5 Hours	14 Hours
2	Teachings Method	Large Group Interactive Session (LGIS)	Large Group Interactive Session (LGIS) Research club activity	Large Group Interactive Session (LGIS)	Large Group Interactive Session (LGIS)	Large Group Interactive Session (LGIS)
3	Assessment Method Summative Assessment	5% MCQs incorporated in MCQs paper of Anatomy, Biochemistry & Physiology separately in end module on campus exam (in all 6 modules) Structured viva with special marks for professionalism	5% MCQs incorporated in MCQs paper of Anatomy, Biochemistry & Physiology separately in end module on campus exam (in all 6 modules)	SEQ based exam at the end of academic year	SEQ based exam at the end of academic year	1 SEQ based exam in every module
	Formative Assessment	MCQs based paper on MS teams	MCQs based paper on MS teams			
		Scoring sheet for skill lab (practical copy) with specific domain of professionalism Scoring sheet for SGD (sketch copy) with specific domain of professionalism				
4	Assessment Time	30 minutes	30 minutes	1 Hour	1 Hour	1 Hour
5	Ratio of Teaching Hours to Assessment Hours	8:1	4:1	16.5:1	8.5: 1	14:1

7. SECTION- H

Detailed Calculation of Hours of Teaching for First Year MBBS for Various Modules of Physiology, Anatomy & Biochemistry

7.1 Teaching Hours First Year MBBS:

Subject	Foundation Module	MSK-I Module	MSK-II Module	Blood Module	CVS Module	Respiration Module	Grand Total (Hours)
Anatomy	48.5	54	27.5	39.5	52.5	30	252
Physiology	37.5	45	33.5	50.5	91.5	40.5	298.5
Biochemistry	48.5	35	26.5	44.5	76.5	34.5	265.5
Pharmacology	11.5	1	1	2			15.5
Pathology	7.5	2		4	3		16.5
Medical Education	8						8
Community Medicine	5	1	1	1	1	3	12
Research		1		1	1		3
Behavioral Sciences	2	2	2	2	2	2	12
Radiology		1		1	1		3
Medicine		1		2	2	2	7
Pediatrics		1		1		1	3
Surgery			1		1	1	3
Neurosurgery		1		1			2
Orthopedics		1					1
Obs & Gynae					1	1	2
ENT					1	1	2
Islamic Studies	1	4				2	7
Quran Translation	1		4	4	4		13
Pak Studies							
SDL (others)			15.5				15.5
Grand Total	170.5	150	112	153.5	237.5	118	941.5

7.2 Modules Hours / Summary for First Year MBBS Modules in various teaching strategies / methods

Subjects	LGIS	Skill	SGDs	SDLs	PBLs	CBLs	Total (hrs)
	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	
Anatomy	66	39	124	50	0	8	302.16
Physiology	132	39	43	51	8	0	290.66
Biochemistry	79	39	39	50	0	0	222.66
Pharmacology	12.5	0	0	0	0	0	12.5
Pathology	21.5	0	0	0	0	0	21.5
Medical Education	6	0	0	0	0	0	7
Community Medicine	12	0	0	0	0	0	12
Research	5	0	0	0	0	0	5
Behavior Sciences	12	0	0	0	0	0	12
Radiology	3	0	0	0	0	0	3
Medicine	26	0	0	0	0	0	26
Pediatrics	5	0	0	0	0	0	5
Surgery	20	0	0	0	0	0	20
Neurosurgery	0	0	0	0	0	0	0
Orthopedics	1	0	0	0	0	0	1
Obs/Gynae	10	0	0	0	0	0	10
Islamic Studies	1	0	0	0	0	0	1
Quran translation	20	0	0	0	0	0	21
Pak Studies	0	0	0	0	0	0	0
SDL for Assessment	0	0	0	94	0	0	94
Eye	5	0	0	0	0	0	5
ENT	6	0	0	0	0	0	6
Clinical Evaluation	0	0	0	0	0	0	1
	443	117	206	245	8	8	1078.48

8. SECTION – I

Detailed Calculation of Hours of Teaching for Second Year MBBS for Various Modules of Physiology, Anatomy & Biochemistry

8.1 Teaching Hours Second Year MBBS:

Subject	GIT Module	Renal Module	Reproduction Module	CNS Module	Sp Senses Module	Endocrinology Module	Grand Total (Hours)
Anatomy	39.1	35.5	36	58	39	38.5	246.1
Physiology	46.1	58.5	39	99	56	63.5	362.1
Biochemistry	49.1	51.5	33	67	33.7	49.5	283.8
Pharmacology	1						1
Pathology	2	1	1	1		1	6
Medical Education							
Community Medicine	2	1	2				7
Research				1		1	2
Behavioral Sciences	2			1		1	4
Radiology	1	1		2			4
Medicine						1	1
Pediatrics	1			1			2
Surgery							
Neurosurgery							
Orthopedics							
Obs & Gynae			2				2
ENT					2		2
Urology		1					1
Eye					3		3
Islamic Studies	4	4		3	3	2.5	16.5
Pak Studies				3	3	2.5	8.5
Quran Translation			4	6	4		14
Grand Total	147.3	155.5	117	242	143.7	160.5	966

8.2 Modules Hours / Summary for Second Year MBBS Modules in various teaching strategies / methods

Subjects	LGIS	Skill	SGDs	SDLs	PBLs	CBLs	Total (hrs)	Percentage
	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)		
Anatomy	58	33	33	56	0	33	219.9	24
Physiology	104	33	36	56	6	33	274.9	30
Biochemistry	61	33	33	56	0	33	222	24
Pharmacology	6	0	0	0	0	0	6	1
Pathology	20	0	0	0	0	0	20	2
Medical Education	0	0	0	0	0	0	0	0
Community Medicine	4	0	0	0	0	0	4	0
Research	4	0	0	0	0	0	4	0
Behavior Sciences	10	0	0	0	0	0	10	1
Radiology	6	0	0	0	0	0	6	1
Medicine	20	0	0	0	0	0	20	2
Pediatrics	10	0	0	0	0	0	10	1
Surgery	24	0	0	0	0	0	24	3
Neurosurgery	0	0	0	0	0	0	0	0
Orthopedics	0	0	0	0	0	0	0	0
Obs/Gynae	10	0	0	0	0	0	10	1
Islamic Studies	22	0	0	0	0	0	22	2
Quran Translation	15	0	0	0	0	0	15	2
Pak Studies	22	0	0	0	0	0	22	2
Eye	10	0	0	0	0	0	10	1
ENT	10	0	0	0	0	0	10	1
Grand Total	416	99	102	168	6	99	909.8	100

9. SECTION – J

Breakup (Distribution) of (70%) Marks of Send Up / Professional Examinations of Physiology, Anatomy & Biochemistry

9.1 Suggested Subject Wise Final Professional Assessment / Send up Examination Format:

9.1.1 Total Marks allocation for three basic subjects:

Subject	Written	OSPE/Viva	Total assessment (70%)	Internal Assessment (30%)	Total
Anatomy	130	OSPE: 63 Viva: 70 Total: 133	263	B1: 37 B2: 37 B3: 38 Total: 112	375 (41%)
Physiology	121	OSPE: 50 Viva: 60 Total: 110	231	B1: 33 B2: 33 B3: 33 Total: 99	330 (37%)
Biochemistry	75	OSPE: 22 Viva: 40 Total: 62	137	B1: 19 B2: 19 B3: 20 Total: 58	195 (22%)
Total			631 (70%)	269 (30%)	900 (100%)

9.1.2 Paper format:

Anatomy:

Paper	Item	No. of Items	Marks
Written	MCQ	40	40
	SAQ	9	90
OSPE	Items	Marks	63
	Histology Slides	20	
	Histology Copy	5	
	Sketch book	5	
	OSPE Station	33	
Viva	Viva Internal	35	70
	Viva External	35	
Total			263

Physiology:

Paper	Item	No. of Items	Marks
Written	MCQ	41	41
	SAQ	8	80
OSPE	Items	Marks	50
	Physiology Copy - I	5	
	Physiology Copy – II	5	
	OSPE	30	
	Procedure	10	
Viva	Viva Internal	30	60
	Viva External	30	
Total			231

Biochemistry:

Paper	Item	No. of Items	Marks
Written	MCQ	35	35
	SAQ	8	40
OSPE	Items	Marks	22
	Biology Copy	5	
	OSPE	12	
	Procedure	5	
Viva	Viva Internal	20	40
	Viva External	20	
Total			137

Note: In Addition to quality assurance there is system of continuous quality improvement for this assessment model.

10. SECTION – K (List of Annexure)

Model Documents for Convenience of the readers:

- Structured Essay Questions Physiology (SEQs)
- Multiple Choice Questions with key (MCQs Single best type) Physiology
- Objectively Structure Practical Examination Physiology (OSPE)
- Video Assisted & Clinically Oriented Integrated Assessment Physiology
- Format of Lectures for Physiology (applicable to all other subjects)
- Structured Viva Voce format Physiology
- Student Academic Record Monitoring Card for Physiology
- Students Scoring Performa for Case Based Learning (CBL), Small Group Discussion (SGD) / Tutorial Assessment
- Students Scoring Performa for Skill Lab / Practical Assessment
- Detailed result with Analysis of First Year MBBS (Blood Module)
- Detailed result with Analysis of Second Year MBBS (CNS Module)
- Detailed Attendance with Analysis of First Year MBBS (Blood Module)
- Detailed Attendance with Analysis of Second Year MBBS (CNS Module)
- Detailed analysis of LMS Results of First & Second Year MBBS

SAMPLE OF MCQS PAPER OF FIRST YEAR MBBS (CVS MODULE)

DEPARTMENT OF PHYSIOLOGY, RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
CVS MODULE MCQS PAPER FOR FIRST YEAR MBBS

Total Marks: 20

Encircle the single best response
Date: 17-10-2022

Roll No. _____

1. In the ECG repolarization of the ventricles is represented by:
 - a. P wave
 - b. QRS complex
 - c. T wave*
 - d. PR interval
 - e. QT interval
2. The blood vessels called as the resistance vessels are:
 - a. Arteries
 - b. Capillaries
 - c. Arterioles*
 - d. Veinules
 - e. Veins
3. Percentage of end-diastolic volume pumped by each ventricle per beat is:
 - a. Stroke volume
 - b. Ejection fraction*
 - c. Filtration fraction
 - d. Cardiac output
 - e. Cardiac index
4. Reynold's number is decreased by the following factor:
 - a. Decrease in blood viscosity
 - b. Increase in blood velocity
 - c. Vasoconstriction
 - d. Polycythemia*
 - e. Fall in haematocrit
5. The condition expected to decrease mean systemic filling pressure is:
 - a. Norepinephrine administration
 - b. Increased blood volume
 - c. Increased sympathetic stimulation
 - d. Increased venous compliance*
 - e. Skeletal muscle contraction
6. An increase in shear stress in a blood vessel results in the following changes:
 - a. Decreased endothelin production
 - b. Decreased cGMP production
 - c. Increased Nitric Oxide release*
 - d. Increased renin production
 - e. Decreased prostacyclin production
7. Sympathetic stimulation results in:
 - a. Vasoconstriction of venous reservoirs*
 - b. Decrease in heart rate
 - c. Decrease in arteriolar resistance
 - d. Decrease in venous resistance
 - e. Increase in epicardial flow
8. Constriction of the renal artery leads to:
 - a. Decrease angiotensin II
 - b. Decrease in arterial pressure
 - c. Increase in renin release*
 - d. Increase in sodium excretion
 - e. Increase in urine output
9. Cardiac output is decreased by:
 - a. Beriberi
 - b. AV shunts
 - c. Amputation of both arms & legs*
 - d. Hypertthyroidism
 - e. Anemia
10. The following vasoactive agent is the most important controller of coronary blood flow:
 - a. Adenosine*
 - b. Bradykinin
 - c. Potassium ions
 - d. Carbon dioxide
 - e. Prostaglandins
11. Chemo-receptors are located in:
 - a. Bi-furcation of common carotid artery*
 - b. Descending aorta
 - c. Sub-clavian artery
 - d. Bifurcation of common iliac artery
 - e. Wall of aortic arch
12. Pread to the heart is increased in:
 - a. Hypertension
 - b. Aortic stenosis
 - c. Increased venous return*
 - d. Hypovolemic shock
 - e. Ischemic heart disease
13. An increase in stroke volume leads to increased:
 - a. End systolic volume
 - b. Cardiac output*
 - c. End diastolic volume
 - d. After load
 - e. Heart rate
14. A final year medical student was asked to perform examination of cardiovascular system. She wrongly palpated both carotid arteries simultaneously due to which patient got unconscious. This condition is called as:
 - a. Carotid sinus syndrome*
 - b. Patent ductus arteriosus
 - c. Long QT syndrome
 - d. Coronary artery disease
 - e. Stokes-Adams syndrome
15. A new born baby was admitted in neonatal intensive care unit soon after delivery due to cyanosis and dyspnea. He had raised right ventricular pressure, right ventricular hypertrophy and left to right shunt on echocardiography. This congenital anomaly is called as:
 - a. Patent ductus arteriosus
 - b. Tetralogy of Fallot*
 - c. Acute respiratory distress syndrome
 - d. Coarctation of aorta
 - e. Atrial septal defect
16. A newly inducted house officer at the first day of his job in operation theatre became unconscious after observing immense blood loss during surgery. This was because of:
 - a. Neurogenic shock
 - b. Hypovolemic shock
 - c. Carotid sinus syndrome
 - d. Vasovagal syncope*
 - e. Cardiogenic shock
17. A 65 -years male presented in Rawalpindi Institute of Cardiology with complaints of chest pain, shortness of breath and generalized swelling of the body. His ECG showed high voltage QRS complexes which are likely to be caused by:
 - a. Cardiac tumors
 - b. Myocardial infarction
 - c. Hypertrophy of cardiac muscles*
 - d. Cardiac arrhythmias
 - e. Cardiac arrest
18. In patients of cardiac failure digitalis increases the force of heart contractions because it primarily inhibits the:
 - a. Sodium -potassium ATPase pump*
 - b. Acetylcholine gated sodium channels
 - c. Calcium pump
 - d. Voltage gated calcium channels
 - e. Potassium leak channels
19. A 21 year old pregnant woman having nephritic syndrome is admitted in the ward. She goes into labour and has a still birth. Following this, she develops disseminated intra vascular coagulation. Treating doctors are sceptical about her prognosis. How will you proceed about informing her regarding her baby's demise?
 - a. Inform her immediately as it's her right to know
 - b. Inform her attendants but not tell her to her condition may get worse due to stress
 - c. Inform her in a step wise manner carefully observing how she's reacting to the info*
 - d. Conceal the information completely
 - e. None of the above
20. The purpose of research is to:
 - a. study and explore knowledge
 - b. start with a conclusion
 - c. fill the gaps in the knowledge*
 - d. define clear objectives
 - e. achieve insights of a concept

DEPARTMENT OF PHYSIOLOGY, RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
CVS MODULE MCQS PAPER FOR FIRST YEAR MBBS

DATED 17th October 2022

Table- 1: Detailed Analysis of MCQs Paper In Context with Level of Cognition & Integration

Sr. #	Domains of Assessment	Level of Integration	Cognitive domain	Question number	Percentage
1.	Physiological Anatomy	Horizontal Integration	C1	Q11,	5%
2.	Physiological Biochemistry	Horizontal Integration	C1	Q10	5%
3.	Core Concepts	Core Concepts of Physiology only	C1	Q1, Q2, Q3	15%
			C2	Q4, Q5, Q6, Q7, Q8, Q9, Q12, Q13, Q18,	45%
4.	Clinical Concepts	Vertical Integration	C3	Q14, Q15, Q16, Q17	20%
5.	Research Year I	Longitudinal running modules	C1	Q20	5%
6.	Ethics Year I	Longitudinal running modules	C3	Q19	5%

Table- 2: Aggregate of various cognitive domains

1.	Horizontal Integration	10%
2.	Core Concepts	60%
3.	Vertical integration	20%
4.	Research	5%
5.	Ethics	5%

Table- 3: Syllabus of CV's Module

Sr. #	Topics of Physiology	Topic of Research
1.	The Heart as a Pump and Function of the Heart Valves & regulation of heart pumping, cardiac cycle	Introduction to Research
2.	Electrocardiogram, its interpretation & its abnormalities	
3.	Medical Physics of Pressure, Flow, and Resistance, Vascular Distensibility and Functions of the Arterial and Venous Systems	
4.	Microcirculation and the Lymphatic System, Local and Humoral Control of Blood Flow by the Tissues	Topic of Ethics
5.	Nervous Regulation of the Circulation, and Rapid & long term Control of Arterial Pressure, hypertension	
6.	Cardiac Output, Venous Return, and Their Regulation	Breaking Bad News
7.	Muscle Blood Flow and Cardiac Output During Exercise; the Coronary & regional circulation	
8.	Cardiac Failure, circulatory shock	
9.	Heart Valves and Heart Sounds; Dynamics of Valvular and Congenital Heart Defects	

Date: 5th October 2022

Dr. Samia Sarwar
 Head / Professor of Physiology
 Rawalpindi Medical University
 Rawalpindi

SAMPLE PAPER OF SEQs OF FIRST YEAR MBBS

DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
CVS MODULE SEQ PAPER FOR FIRST YEAR MBBS

Total Marks: 25

Date: 17-10-2022

Attempt all questions

- Q.1** In an experimental study, the heart rate of athletes and non-athletes were compared which exhibited bradycardia in athletes even at rest. 1
a) Define bradycardia. 1
b) What is the effect of bradycardia on duration of cardiac cycle? 1
c) Explain the period of Isovolumic (Isometric) relaxation of the cardiac cycle. 3
- Q.2** A 55 years male presented to medical specialist for routine medical checkup. Detailed history and examination revealed that he had an unhealthy life style with lack of physical activity. His mean arterial pressure was greater than 110 mm Hg. With a systolic pressure greater than 135 mm Hg & diastolic blood pressure greater than 90 mm Hg recorded on various occasions. 1
a) What is the most likely diagnosis? 1
b) Enlist the general classes of drugs which can be used to treat this patient. 1
c) Briefly outline the physiological role of baroreceptor reflex in controlling high blood pressure. 3
- Q.3** A 60 years female presented in emergency department of Rawalpindi Institute of Cardiology with complaints of severe chest pain radiating to neck & left arm, shortness of breath, sweating and nausea. Her ECG showed ST segment elevation and cardiac enzymes were raised. 1
a) What is the diagnosis? 1
b) Name the cardiac enzymes which would be raised in this patient. 1
c) Explain the physiologic anatomy of coronary blood supply with the help of a diagram. 3
- Q.4** A 20-years boy presented in surgical emergency with complaints of high-grade fever, severe abdominal pain, dizziness and altered state of consciousness. His blood pressure was 80/50mmHg and his abdominal ultrasound showed ruptured appendix with fluid in peritoneal cavity. 1
a) Define circulatory shock. 1
b) Diagnose the type of shock in this patient. 1
c) Briefly outline the physiology of treatment in shock. 3
- Q.5** A 10-years child presented in pediatric emergency with shortness of breath, fever, and chest discomfort. He had previous history repeated throat infections. Echocardiography report revealed increased thickness of the valves on left side of heart and the patient had mitral stenosis and aortic regurgitation. 1
a) What is the most likely diagnosis? 1
b) Which type of murmurs would you hear while auscultating the chest? 1
c) What are the normal heart sounds? Briefly write their physiologic cause of origin. 3

DEPARTMENT OF PHYSIOLOGY, RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
CVS MODULE SEQs PAPER FOR FIRST YEAR MBBS

DATED 17th October 2022

Table- 1: Detailed Analysis of SEQs Paper In Context with Level of Cognition & Integration

Sr. #	Domains of Assessment	Level of Integration	Cognitive domain	Question number & marks (25)	Percentage
1.	Physiological Anatomy	Horizontal Integration	C2	Q.3c (3)	12%
2.	Physiologic Biochemistry	Horizontal Integration	C1	Q.3b (1)	4%
3.	Core Concepts	Core Concepts of Physiology only	C1	Q.1a (1)	4%
			C2	Q.1b (1), Q.1c (3) Q.2 c(3), Q.4c(3), Q.5c(3)	52%
4.	Clinical Concepts	Vertical Integration	C1	Q.2b (1), Q.4a(1)	8%
			C3	Q.2a (1), Q.3a (1) Q.4b (1), Q.5a(1), Q.5b (1)	20%

Table- 2: Aggregate of various cognitive domains

1. Horizontal Integration	16%
2. Core Concepts of physiology only	56%
3. Vertical integration	28%

Table- 3: Syllabus of CVS Module

Sr. #	Topics of Physiology
1.	The Heart as a Pump and Function of the Heart Valves & regulation of heart pumping, cardiac cycle
2.	Electrocardiogram, its interpretation & its abnormalities
3.	Medical Physics of Pressure, Flow, and Resistance, Vascular Distensibility and Functions of the Arterial and Venous Systems
4.	Microcirculation and the Lymphatic System, Local and Humoral Control of Blood Flow by the Tissues
5.	Nervous Regulation of the Circulation, and Rapid & long term Control of Arterial Pressure, hypertension
6.	Cardiac Output, Venous Return, and Their Regulation
7.	Muscle Blood Flow and Cardiac Output During Exercise; the Coronary & regional circulation
8.	Cardiac Failure, circulatory shock
9.	Heart Valves and Heart Sounds; Dynamics of Valvular and Congenital Heart Defects

Date: 5th October 2022

Dr. Samia Sarwar
Head / Professor of Physiology
Rawalpindi Medical University
Rawalpindi

SAMPLE MCQS PAPER OF SECOND YEAR MBBS(SPECIAL SENSES MODULE)

DEPARTMENT OF PHYSIOLOGY, RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI
SPECIAL SENSES MODULE MCQS PAPER FOR SECOND YEAR MBBS

Total Marks:20

Date:13-10-2022

Roll No. _____

Encircle the single best response

1. The aqueous humor of the eyes flow through the canal of Schlemm into the:
 - a. Anterior chamber
 - b. Lens
 - c. Posterior chamber
 - d. Trabeculae
 - e. Aqueous veins *
2. The condition in which ciliary muscle is completely relaxed and light rays are focused on the retina is known as:
 - a. Emmetropia*
 - b. Hyperopia
 - c. Myopia
 - d. Astigmatism
 - e. Presbyopia
3. The light sensitive pigment present in rods is:
 - a. Rhodopsin*
 - b. Photopsin
 - c. All trans retinal
 - d. Retinol
 - e. Cis retinal
4. The movement of eyes in which eyes remain fixed on a moving object is called:
 - a. Fixation
 - b. Strabismus
 - c. Pursuit movement*
 - d. Accommodation
 - e. Saccadic movement
5. Destruction of optic chiasm, leads to:
 - a. Color blindness
 - b. Myopia
 - c. Bitemporal hemianopia*
 - d. Astigmatism
 - e. Cataract
6. In anopia, when ciliary muscle is completely relaxed, the light rays coming from distant object are focused in front of retina because of:
 - a. Too much refractive power*
 - b. Short eyeball
 - c. Opacity in the lens
 - d. Different curvatures of lens in different planes
 - e. Less elasticity of lens
7. During accommodation the eye focuses on nearer objects because of:
 - a. Contraction of ciliary muscles by parasympathetic nerves**
 - b. Shortening of the eyeballs
 - c. Thinning of the lens
 - d. Dilaton of the pupils
 - e. Decreased refractive power
8. Astigmatism is corrected by using the following lens:
 - a. Convex
 - b. Concave
 - c. Spherical
 - d. Cylindrical*
 - e. Biconcave
9. A 55 years male presented in Ophthalmology department with complaint of blurring and decreased vision. On fundoscopic examination, a cloudy & opaque area was seen in the lens. This condition is known as:
 - a. Cataract*
 - b. Glaucoma
 - c. Presbyopia
 - d. Keratitis
 - e. Conjunctivitis
10. A very small pupil is associated with:
 - a. Increase in aqueous humour production
 - b. Activation of sympathetic nerve fibres
 - c. Constriction of pupillary dilator muscle
 - d. Excedent depth of focus*
 - e. Improved vision in dim light
11. A 40 years male presented in Ophthalmology department with complaints of sudden loss of vision in both eyes. On fundoscopic examination retinal detachment was diagnosed which is most likely caused by:
 - a. Fluid collecting between neural retina and pigment epithelium *
 - b. Relaxation of fine collagenous fibrils in the vitreous humor
 - c. Low intra ocular pressure
 - d. Opaque areas in the lens
 - e. Loss of accommodation by the lens
12. The scala media is filled with a fluid called:
 - a. Endolymph*
 - b. Lymphatic fluid
 - c. Cerebrospinal fluid
 - d. Perilymph
 - e. Interstitial fluid
13. Place principle is used to detect different sound frequencies by determining their:
 - a. Position along the basilar membrane that are stimulated the most*
 - b. Changes in intensities
 - c. Endocochlear potential
 - d. Changes in loudness
 - e. Stimulation at helicotrema
14. Endocochlear potential is generated by:
 - a. Repolarization of hair cells
 - b. Continual secretion of potassium ions into the scala media*
 - c. Influx of calcium ions
 - d. Upward movement of basilar filiers
 - e. Movement of stereocilia
15. A 35 years male presented to otorhinolaryngology (ENT) department with complaints of inability to hear sounds which he developed after using some antibiotic for the treatment of tuberculosis. The drug responsible for deafness in this patient is:
 - a. Streptomycin*
 - b. Clarithromycin
 - c. Ciprofloxacin
 - d. Azithoprine
 - e. Cycloporine
16. A common type of deafness caused by fibrosis in the middle ear after repeated infection is most likely to be:
 - a. Otitis media
 - b. Otitis externa
 - c. Otosclerosis*
 - d. Otitis interna
 - e. Labyrinthitis
17. A substance used frequently by psychologists for demonstrating taste blindness is:
 - a. Phenylthiocarbamide*
 - b. Phenylthiourea
 - c. Potassium H tartrate
 - d. Chloroform
 - e. Pilocarpine
18. After olfactory cells bind to odour molecules, a sequence of intracellular events occur that results in the entrance of specific ions that depolarize the olfactory receptor cell. The ion responsible for this depolarization is:
 - a. Calcium
 - b. Chloride
 - c. Hydrogen
 - d. Potassium
 - e. Sodium *
19. Researcher wants to determine prevalence of a Disease X in community. Study design appropriate for this purpose is:
 - a. Case control
 - b. Cohort
 - c. Case series
 - d. Cross sectional*
 - e. Experimental study
20. The organization, identification, and interpretation of sensory information in order to understand the environment is:
 - a. Adaptation
 - b. Attention
 - c. Illusion
 - d. Perception*
 - e. Transduction

DETAILED ANALYSIS OF MCQS PAPER OF SECOND YEAR MBBS (SPECIAL SENSES MODULE)

DEPARTMENT OF PHYSIOLOGY, RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
SPECIAL SENSES MODULE MCQS PAPER FOR SECOND YEAR MBBS

DATED 13th October 2022

Table- 1: Detailed Analysis of MCQS Paper In Context with Level of Cognition & Integration

Sr. #	Domains of Assessment	Level of Integration	Cognitive domain	Question number	Percentage
1.	Physiological Anatomy	Horizontal Integration	C1	Q.1	5%
2.	Physiological Biochemistry	Horizontal Integration	C1	Q17	5%
3.	Core Concepts	Core Concepts of Physiology only	C1	Q.2, Q3, Q.4, Q.12	20%
			C2	Q.5, Q.6, Q.7, Q.8, Q.10, Q.13, Q.14 Q.18	40%
4.	Clinical Concepts	Vertical Integration	C3	Q.9, Q.11, Q.15, Q.16	20%
5.	Research Year II	Longitudinal running modules	C3	Q.19	5%
6.	Ethics Year II	Longitudinal running modules	C1	Q.20	5%

Table- 2: Aggregate of various cognitive domains

1.	Horizontal Integration	10%
2.	Core Concepts	60%
3.	Vertical integration	20%
4.	Research	5%
5.	Ethics	5%

Table- 3: Syllabus of Special Senses Module

Sr. #	Topics of Physiology	Topics of Research	Topics of Ethics
1.	The Eye: I. Optics of Vision		
2.	The Eye: II. Receptor and Neural Function of retina		
3.	The Eye: III. Central Neurophysiology of Vision	Study Designs	Perception
4.	The Sense of Hearing		
5.	The Chemical Senses - Taste and Smell		

Date: 29th September 2022

Dr. Samia Sarwar
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Page- 2 of 2

SAMPLE PAPER OF SEQs SECOND YEAR MBBS (SPECIAL SENSES MODULE)

DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
SPECIAL SENSES MODULE SEQ PAPER FOR SECOND YEAR MBBS

Total Marks: 25

Date: 13-10-2022

-Attempt all questions

- Q.1** A 52 years car driver presented to ophthalmology clinic with 4 days history of impaired vision in dim light. He had blurred vision while driving in the dark and was unable to see pedestrians walking during night time. 1
- a) What is the most probable diagnosis? 1
 - b) Which vitamin in your opinion could be deficient in this patient? 3
 - c) Briefly outline the mechanism of excitation of rods when Rhodopsin is activated by light energy? 3
- Q.2** A 61 years female, retired school teacher presented to medical emergency with complaints of severe pain in her right eye, associated with sudden blurred vision and mild redness. Her blood pressure was 120/80 mmHg. An ophthalmologist was called in the emergency department for his consultation regarding this case. Her detailed examination revealed reduced visual acuity and an intraocular pressure of 35 mmHg in the affected eye. 1
- a) What is the most likely diagnosis? 1
 - b) Briefly write the pathophysiology of this condition. 1
 - c) Explain the mechanism of formation and flow of aqueous humor with the help of a diagram. 3
- Q.3** A student of class four feels difficulty in reading from the blackboard while sitting in back benches of the class. After detailed eye examination by an ophthalmologist he was diagnosed as myopic. 1
- a) Define myopia. 1
 - b) How will you correct this refractive error. 3
 - c) Give a brief account of the mechanism of accommodation. 3
- Q.4** A 15 years teenager presented to otolaryngology clinic with complaints of impaired hearing in left ear. His detailed past history revealed that he had repeated ear infections, cold, flu and was allergic to pollen. His Rinne's test was negative with bone conduction greater than air conduction. The Weber's test was lateralized to the affected ear. 2
- a) Define the two types of deafness. 1
 - b) Which type of deafness is the patient suffering from? 1
 - c) Give a brief account of attenuation reflex. 2
- Q.5** A 16 years teenager presented to ENT clinic with complaint of anosmia. He had a history of nasal congestion, fever and flu for the whole last week. The attending physician advised him COVID testing which came out to be positive. 4
- a. Explain how the sense of smell is perceived and transmitted to central nervous system? 4
 - b. What is affective nature of smell? 1

DEPARTMENT OF PHYSIOLOGY, RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
SPECIAL SENSES MODULE SEQs PAPER FOR SECOND YEAR MBBS

DATED 13th October 2022

Table- 1: Detailed Analysis of SEQs Paper In Context with Level of Cognition & Integration

Sr. #	Domains of Assessment	Level of Integration	Cognitive domain	Question number & marks (25)	Percentage
1.	Physiological Anatomy	Horizontal Integration	C1	Q.2c (3)	12%
2.	Physiologic Biochemistry	Horizontal Integration	C1	Q.1b (1)	4%
3.	Core Concepts	Core Concepts of Physiology only	C1	Q.3a (1), Q.4a,(2) Q.5b (1)	16%
			C2	Q.1c,(3) Q.3c, (3) Q.4c,(2) Q.5a (4)	48%
			C2	Q.2b,(1) Q.3b (1)	8%
4.	Clinical Concepts	Vertical Integration	C3	Q.1a, (1) Q.2a, (1) Q.4b (1)	12%

Table- 2: Aggregate of various cognitive domains

1.	Horizontal Integration	16%
2.	Core Concepts	64%
3.	Vertical integration	20%

Table- 3::Syllabus of Special Senses Module

Sr. #	Topics of Physiology
1.	The Eye: I. Optics of Vision
2.	The Eye: II. Receptor and Neural Function of retina
3.	The Eye: III. Central Neurophysiology of Vision
4.	The Sense of Hearing
5.	The Chemical Senses - Taste and Smell

Date: 29th September 2022

Dr. Samia Sarwar
Head / Professor of Physiology
Rawalpindi Medical University
Rawalpindi

**COGNITIVE LEVELS OF BLOCK II OSPE PAPER
FOR FIRST YEAR MBBS**

Physiology Station No.1

(CELL COUNTS)

Sr. #	Question number	Cognitive domain	Psychomotor domain	affective domain	Level of Integration	Total Marks
1	a	C1	P3	A3	Horizontal Integration	1
2	b	C1	P3	A3	Horizontal Integration	1
3	c	C2	P3	A3	Vertical Integration	1

Block – II (MSK-II & Blood Module) OSPE

Sr #	Topic	Station #
1.	Determination of Total leukocyte Count (TLC)	1 A
2.	Estimation of Red Blood Cell (RBC) count	1 B
3.	Determination of platelet count	1 C
4.	Determination of Differentiate leukocyte Count (DLC)	2
5.	Determination of ABO blood groups	3 A
6.	Determination of Rh blood groups	3 B
7.	Determination of Clotting Time (CT)	4 A
8.	Determination of Bleeding Time (BT)	4 B
9.	Recording of body temperature	5 A
10.	Demonstration of Triple response	5 B
11.	Practical note book / sketch copy	6

Exam: 1st Year MBBS
Block- II
Day/ Date: 10-09-2022
Saturday

OSPE
DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI

INTEGRATED MODULAR CURRICULUM

Physiology Station No.1

(CELL COUNTS)

For Organizer:

Requirements:

1. Response Sheet
2. Pen/Ball Point
3. Table
4. Chair/Stool
5. Neubauer Slide & All Three Diluting Fluids

Cut along the dotted line

Station No.

For Candidate:

Time Allowed: 2 Minutes

- a. What is the preferred dilution ratio for red blood cells count & platelet count? (0.5, 0.5)
- b. Write the composition of Hayem's Fluid. (1)
- c. How would you interpret a platelet count of 80,000 /mm³? (1)

Cut along the dotted line

Station No.

For Examiner:

Key

- a. 1:200 , 1:100 (0.5, 0.5)
- b. NaCl, NaSO₄, HgCl (1)
- c. Thrombocytopenia (1)

Exam: 1st Year MBBS
Block- II
Day/ Date: 10-09-2022
Saturday

OSPE
DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI

INTEGRATED MODULAR CURRICULUM

Physiology Station No.2

(DIFFERENTIAL LEUKOCYTE COUNT)

For Organizer:

Requirements:

1. Response Sheet
2. Pen/Ball Point
3. Table
4. Chair/Stool
5. Microscope with differential leukocyte count slides, Pictures of Neutrophil (A) & Lymphocyte (B)

Cut along the dotted line

Station No.

For Candidate:

Time Allowed: 2 Minutes

- a. Identify the cells labeled A & B. (0.25,0.25)
- b. Points of Identification. (1.5)
- c. What is the power of objective lens used for identifying the cells and how much was the total magnification achieved? (0.5, 0.5)

Cut along the dotted line

Station No.

For Examiner:

Key

- a. Neutrophil (A) & Lymphocyte (B) (0.25,0.25)
- b. Granular / Agranular cytoplasm, multilobed / Large nucleolus, eosinophilic & basophilic granules. rim of cytoplasm (1.5)
- c. x100, x1000 (0.5,0.5)

**COGNITIVE LEVELS OF BLOCK II OSPE PAPER
FOR FIRST YEAR MBBS**

Physiology Station No.2

(DIFFERENTIAL LEUKOCYTE COUNT)

Sr. #	Question number	Cognitive domain	Psychomotor domain	affective domain	Level of Integration	Total Marks
1	a	C2	P3	A3	Horizontal Integration	0.5
2	b	C1	P3	A3	Horizontal Integration	1.5
3	c	C1	P3	A3	Horizontal Integration	1

Block – II (MSK-II & Blood Module) OSPE

Sr #	Topic	Station #
12.	Determination of Total leukocyte Count (TLC)	1 A
13.	Estimation of Red Blood Cell (RBC) count	1 B
14.	Determination of platelet count	1 C
15.	Determination of Differentiate leukocyte Count (DLC)	2
16.	Determination of ABO blood groups	3 A
17.	Determination of Rh blood groups	3 B
18.	Determination of Clotting Time (CT)	4 A
19.	Determination of Bleeding Time (BT)	4 B
20.	Recording of body temperature	5 A
21.	Demonstration of Triple response	5 B
22.	Practical note book / sketch copy	6

OSPE

DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI

INTEGRATED MODULAR CURRICULUM

Physiology Station No.3

(BLOOD GROUPS)

For Organizer:

Requirements:

1. Response Sheet
2. Pen/Ball Point
3. Table
4. Chair/Stool
5. Slide Showing AB+ve blood group

Cut along the dotted line

Station No.

For Candidate:

Time Allowed: 2 Minutes

- a. Interpret the blood group displayed on the given slide? (0.5)
- b. Which antibodies will be present in the plasma of this person? (0.5)
- c. If this person requires blood transfusion, what will be your choice? (0.5)
- d. How will you perform procedure of **cross matching**? (1.5)

Cut along the dotted line

Station No.

For Examiner:

Key

- a. AB+ve (0.5)
- b. None (0.5)
- c. AB+ve, O+ve (0.5)
- d. Donor red blood cells & Recipient Plasma are mixed. If agglutination is observed this indicates a mismatch blood group and if agglutination is not observed this indicate matched blood group. (1.5)

**COGNITIVE LEVELS OF BLOCK II OSPE PAPER
FOR FIRST YEAR MBBS**

Physiology Station No.3

(BLOOD GROUPS)

Sr. #	Question number	Cognitive domain	Psychomotor domain	affective domain	Level of Integration	Total Marks
1	a	C2	P3	A3	Vertical Integration	0.5
2	b	C2	P3	A3	Horizontal Integration	0.5
3	c	C3	P3	A3	Vertical Integration	0.5
4	d	C3	P3	A3	Vertical Integration	1.5

Block – II (MSK-II & Blood Module) OSPE

Sr #	Topic	Station #
23.	Determination of Total leukocyte Count (TLC)	1 A
24.	Estimation of Red Blood Cell (RBC) count	1 B
25.	Determination of platelet count	1 C
26.	Determination of Differentiate leukocyte Count (DLC)	2
27.	Determination of ABO blood groups	3 A
28.	Determination of Rh blood groups	3 B
29.	Determination of Clotting Time (CT)	4 A
30.	Determination of Bleeding Time (BT)	4 B
31.	Recording of body temperature	5 A
32.	Demonstration of Triple response	5 B
33.	Practical note book / sketch copy	6

Exam: 1st Year MBBS
Block- II
Day/ Date: 10-09-2022
Saturday

OSPE
DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI

INTEGRATED MODULAR CURRICULUM

Physiology Station No.4

(BLEEDING TIME & CLOTTING TIME)

For Organizer:

Requirements:

1. Response Sheet
2. Pen/Ball Point
3. Table
4. Chair/Stool
5. Blotting Paper for Bleeding Time, Capillary tubes for Clotting Time

Cut along the dotted line

Station No.

For Candidate:

Time Allowed: 2 Minutes

Give your clinical diagnosis after interpreting the given profile of these three patients:
(1,1,1)

	(a)	(b)	(c)
Patients	Mr. Ali 42-year male	Mr. Ijaz 30-year male	Ms. Sana 45-year female
Platelet count	150,000	60,000	50,000
Bleeding time	>10 minutes	>12 minutes	>12 minutes
Clotting time	3 minutes	2 minutes	>7 minutes

Cut along the dotted line

Station No.

For Examiner:

Key

- a. Thrombosthenia, Scurvy (Mr. Ali) (1)
- b. Thrombocytopenia (Mr. Ijaz) (1)
- c. Disseminated Intravascular Coagulopathy (Ms. Sana) (1)

**COGNITIVE LEVELS OF BLOCK II OSPE PAPER
FOR FIRST YEAR MBBS
Physiology Station No.4**

(BLEEDING TIME & CLOTTING TIME)

Sr. #	Question number	Cognitive domain	Psychomotor domain	affective domain	Level of Integration	Total Marks
1	a	C3	P3	A3	Vertical Integration	1
2	b	C3	P3	A3	Vertical Integration	1
3	c	C3	P3	A3	Vertical Integration	1

Block – II (MSK-II & Blood Module) OSPE

Sr #	Topic	Station #
34.	Determination of Total Leukocyte Count (TLC)	1 A
35.	Estimation of Red Blood Cell (RBC) count	1 B
36.	Determination of platelet count	1 C
37.	Determination of Differentiate leukocyte Count (DLC)	2
38.	Determination of ABO blood groups	3 A
39.	Determination of Rh blood groups	3 B
40.	Determination of Clotting Time (CT)	4 A
41.	Determination of Bleeding Time (BT)	4 B
42.	Recording of body temperature	5 A
43.	Demonstration of Triple response	5 B
44.	Practical note book / sketch copy	6

OSPE
DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI

INTEGRATED MODULAR CURRICULUM

Physiology Station No.5

(RECORDING OF BODY TEMPERATURE)

For Organizer:

Requirements:

1. Response Sheet
2. Pen/Ball Point
3. Table
4. Chair/Stool
5. Thermometer showing 104⁰ Fahrenheit

Cut along the dotted line

Station No.

For Candidate:

Time Allowed: 2 Minutes

A patient was received in the emergency department of Benazir Bhutto Hospital, Rawalpindi, with chills and fever, his temperature record is being provided to you on the given clinical thermometer.

- a. What is the reading shown on the provided thermometer? (0.5)
- b. Name two thermo regulatory responses which might be invoked in this patient. (0.5)
- c. Which part of hypothalamus is active in this patient? (1.5)
- d. What is the preferred site for recording of body temperature in an unconscious patient? (0.5)

Cut along the dotted line

Station No.

For Examiner:

Key

- a. 104⁰ Fahrenheit (0.5)
- b. Vasodilatation, sweating (0.5)
- c. Anterior hypothalamus (1.5)
- d. Axilla / Groin (0.5)

**COGNITIVE LEVELS OF BLOCK II OSPE PAPER
FOR FIRST YEAR MBBS**

Physiology Station No.5

(RECORDING OF BODY TEMPERATURE)

Sr. #	Question number	Cognitive domain	Psychomotor domain	affective domain	Level of Integration	Total Marks
1	a	C2	P3	A3	Vertical Integration	0.5
2	b	C2	P3	A3	Horizontal Integration	0.5
3	c	C2	P3	A3	Horizontal Integration	1.5
4	d	C1	P3	A3	Horizontal Integration	0.5

Block – II (MSK-II & Blood Module) OSPE

Sr #	Topic	Station #
45.	Determination of Total leukocyte Count (TLC)	1 A
46.	Estimation of Red Blood Cell (RBC) count	1 B
47.	Determination of platelet count	1 C
48.	Determination of Differentiate leukocyte Count (DLC)	2
49.	Determination of ABO blood groups	3 A
50.	Determination of Rh blood groups	3 B
51.	Determination of Clotting Time (CT)	4 A
52.	Determination of Bleeding Time (BT)	4 B
53.	Recording of body temperature	5 A
54.	Demonstration of Triple response	5 B
55.	Practical note book / sketch copy	6

DEPARTMENT OF PHYSIOLOGY
COGNITIVE LEVELS OF BLOCK II OSPE PAPER
FOR FIRST YEAR MBBS
 Dated: 10th September-2022

Sr .#	Physiology Station number	Topic	Question number	Cognitive domain	Psychomotor Domain	Affective Domain	Level of Integration	Total Marks (Out of 15)	Percentage
1	1	Cell Counts	a	C1	P3	A3	Horizontal	1	6.6%
	b		C1	P3	A3	Horizontal	1	6.6%	
	c		C2	P3	A3	Vertical	1	6.6%	
2	2	DLC	a	C2	P3	A3	Horizontal	0.5	3.3%
	b		C1	P3	A3	Horizontal	1.5	10%	
	c		C1	P3	A3	Horizontal	1	6.6%	
3	3	Blood groups	a	C2	P3	A3	Vertical	0.5	3.3%
	b		C2	P3	A3	Horizontal	0.5	3.3%	
	c		C3	P3	A3	Vertical	0.5	3.3%	
	d		C3	P3	A3	Vertical	1.5	10%	
4	4	Bleeding time & clotting time	a	C3	P3	A3	Vertical	1	6.6%
	b		C3	P3	A3	Vertical	1	6.6%	
	c		C3	P3	A3	Vertical	1	6.6%	
5	5	Recording of body temperature	a	C2	P3	A3	Vertical	0.5	3.3%
	b		C2	P3	A3	Horizontal	0.5	3.3%	
	c		C2	P3	A3	Horizontal	1.5	10%	
	d		C1	P3	A3	Horizontal	0.5	3.3%	

Horizontal Integration	53%
Vertical Integration	47%

Block – II (MSK-II & Blood Module) OSPE

Sr #	Topic	Station #
1.	Determination of Total leukocyte Count (TLC)	1 A
2.	Estimation of Red Blood Cell (RBC) count	1 B
3.	Determination of platelet count	1 C
4.	Determination of Differentiate leukocyte Count (DLC)	2
5.	Determination of ABO blood groups	3 A
6.	Determination of Rh blood groups	3 B
7.	Determination of Clotting Time (CT)	4 A
8.	Determination of Bleeding Time (BT)	4 B
9.	Recording of body temperature	5 A
10.	Demonstration of Triple response	5 B
11.	Practical note book / sketch copy	6

Date: 8th September 2022

Dr. Samia Sarwar
 Head / Professor of Physiology
 Rawalpindi Medical University
 Rawalpindi

**Video Assisted
&
Clinically Oriented Integrated Assessment
For Block – II of First Year MBBS**

Compiled, Supervised & Implemented by Department of Physiology

8th September 2022

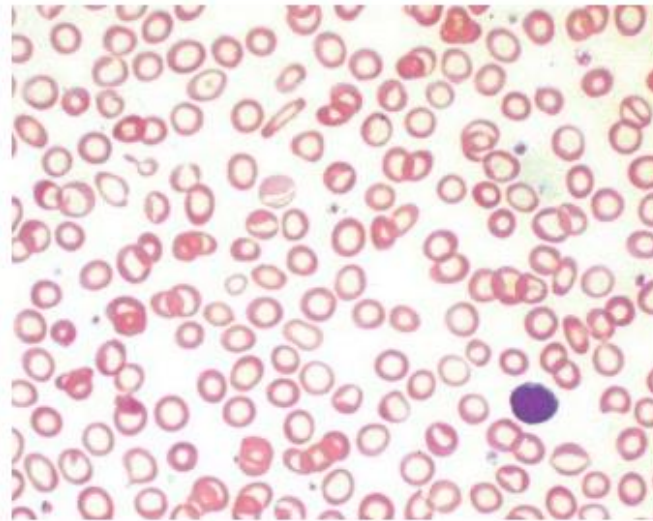
Time of Assessment 10:00 to 10:30am

(Vertical Integration)

Dr. Samia Sarwar
Head / Professor of Physiology
Dean Allied Health sciences
Rawalpindi Medical University,
Rawalpindi

A 42 years female presented to medical specialist with complaints of fatigue, lethargy and shortness of breath. She had history of increased blood loss during menstrual cycle. On examination she was pale and her Complete Blood Count revealed that she was suffering from anemia.

- 1. Identify the type of anemia shown in the picture (1)**
- 2. Enlist the diagnostic findings in the picture (2)**
- 3. Write down the pathophysiology of this type of anemia. (2)**



Key – Slide 1

Q. Identify the type of anemia shown in the picture (1)

Ans: Iron deficiency anemia

Q. Enlist the diagnostic findings in the picture (2)

Ans: Microcytosis, Hypochromia, Anisocytosis, Poikilocytosis

Q. Write down the pathophysiology of this type of anemia. (2)

Ans: Excessive blood loss results in Iron deficiency, which inhibits the production of Heme. Normally heme incorporates an Iron in its structure. Decreased heme level leads to decreased hemoglobin production and hence Iron deficiency Anemia.

A five years boy had difficulty in rising from a lying and sitting position. He had waddling gait and history of frequent falls. His growth was also delayed and had learning disabilities. The detailed investigations and muscle biopsy revealed he was suffering from Duchene Muscular Dystrophy.

1. Why does this disease affects only males?

(1)

2. Name the defective protein in this case (1)

3. Write down the pathophysiology of this disease (3)



Key – Slide 2

Q. Why does this disease affect only males? (1)

Ans: Because it is an X linked recessive disorder

Q. Name the defective protein in this case (1)

Ans: Dystrophin

Q. Write down the pathophysiology of this disease (3)

Ans: Dystrophin stabilizes the sarcolemma by attaching the actin cytoskeleton to the extracellular matrix through the dystrophin-associated glycoprotein complex. The absence of dystrophin leads to damage to muscle cells.

Format for Lectures of Physiology (Applicable for others also)

S.No	Headings	Domains / Type of integration	Approximate %
1	Title	-----	
2	Learning Objectives		
3	Physiological Anatomy	Brain storming/ Horizontal integration interactive	5%
4	Histology	(if applicable) Brain storming/ Horizontal integration interactive	
5	Physiological Biochemistry		5%
6	Core Concepts of the topic	Horizontal integration	45%
7	Pathophysiology	Vertical Integration	20%
8	Clinical aspects along with pictures	Vertical Integration	10%
9	Relevant investigation, Management/ treatment	(if applicable) Vertical Integration	5%
10	Clinical Scenarios relevant to the topic 1or 2 with key	Vertical Integration interactive	5%
11	Chunk from Relevant to the topic from Journal article with reference	Sensitization to Research Culture Use of Digital Library Self Directed Learning	3%
12	Ethics		2%
13	References		

Dr. Samia Sarwar
Professor & Head
Department of Physiology
Rawalpindi Medical University Rawalpindi

Structured Viva Voce format Physiology

DEPARTMENT OF PHYSIOLOGY RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI
UPDATED STRUCTURED PERFORMA FOR VIVA VOCE OF MODULE / BLOCK EXAMINATION

TOPIC: _____ MODULE: _____ TOTAL MARKS: _____ DATE: _____ TEACHER NAME: _____ SIGNATURE _____

Sr. No.	Roll No.	Students Name	Definition (3 Marks) Q=2 C1	Physiological Mechanism (6 Marks) Q=2 C2	Pathophysiological Mechanism (5 Marks) Q=2 C2	Related Diseases (2 Marks) Q=1 C3	Diagnostic Parameters (2 Marks) Q=1 C3	Management / Treatment Guidelines (2 Marks) Q=1 C3	Professionalism & Behavior Components; <ul style="list-style-type: none"> • Appropriate dressing & white coat • College ID card with picture • Behavior • Level of Confidence/ Non verbal Body language • Communication Skills • Language of Communication • Volume of voice • Clarity & fluency of speech • Understanding of questions • Prioritizing the answers (3 Marks) A3	Extraordinary questions for distinction (2 marks) Q=1 C3	Total marks obtained out of 25
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

Updated on:
14th September 2022

Dr. Samia Sarwar
 Head / Professor of Physiology
 Dean Allied Health Sciences
 Rawalpindi Medical University
 Rawalpindi

RMU MODEL OF PROBLEM BASED LEARNING (PBL)

INTRODUCTION

PBL is an effective way of delivering content of integrated medical curriculum and offers several advantages over traditional teaching methods. It is founded on principles of adult learning theory and involves student motivation encouraging them to set own learning goals. It is based upon multidisciplinary approach and different themes can be used to create a case scenario.

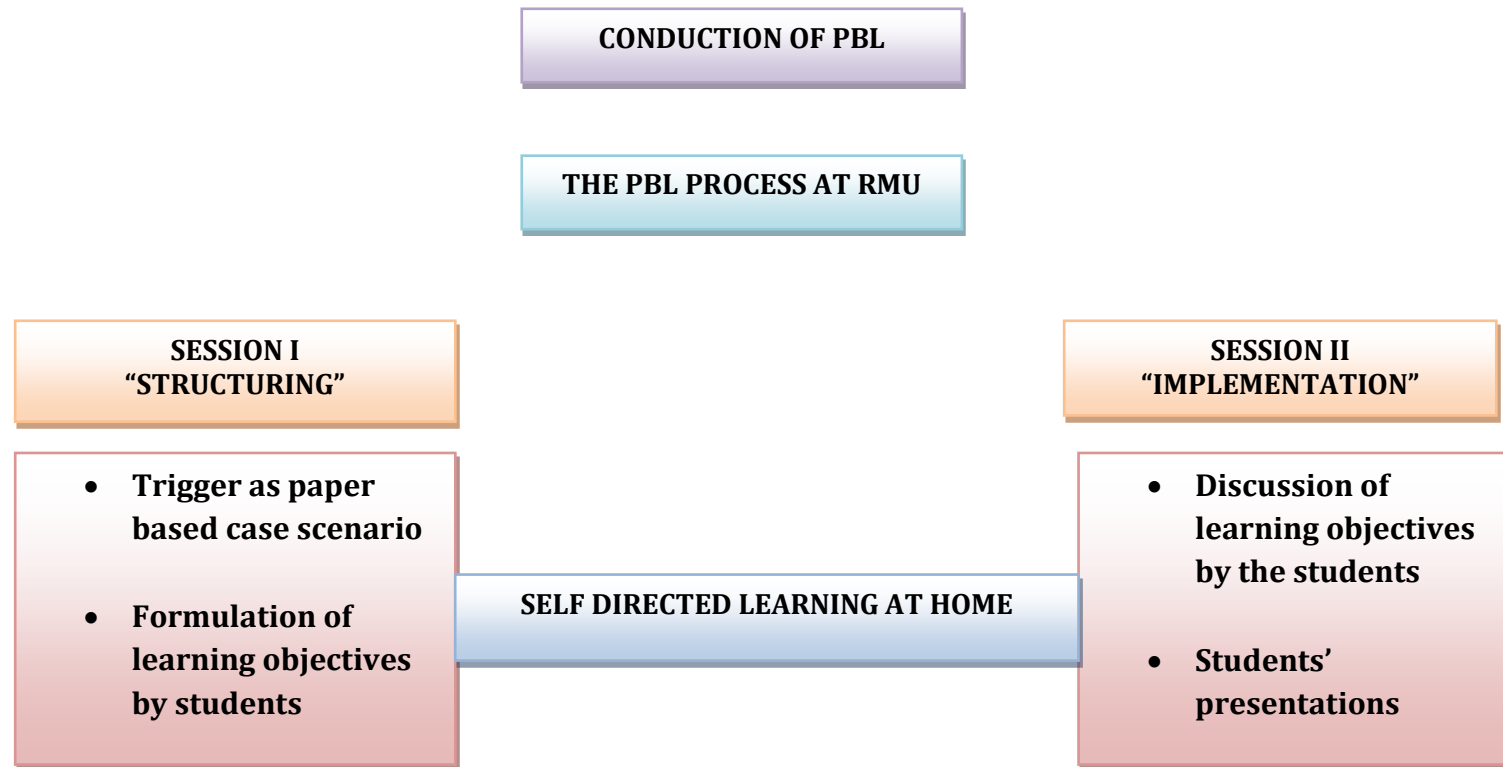
AT RAWALPINDI MEDICAL UNIVERSITY

- At Rawalpindi Medical University, PBL sessions are conducted as part of modular integrated curriculum.
- PBL sessions are conducted within each module of first and second year MBBS (a total of 12 modules of both classes class every year)
- A specified number of large group interactive sessions (LGIS) are also conducted before the session to introduce the topics and providing overview of relevant difficult concepts.

HARDEN INTEGRATION LADDER

- Introduction of integrated sessions as part of curriculum makes the university stand at **LEVEL 8 of Harden Integration Ladder** **“The Complementary programme”** where the focus of teaching is theme or a topic where different disciplines can contribute.

TEACHING AND LEARNING STRATEGY:	<ul style="list-style-type: none"> • Small group activity (conducted in 10 batches of each class) • Student centered approach
OBJECTIVES:	Acquisition of knowledge
	Active participation of each and every student
	Integration of core curriculum
	Develop generic competencies and attitudes among students <ul style="list-style-type: none"> • Team work • Chairing a group • Listening • Recording • Cooperation • Respect for colleagues' views • Critical evaluation of literature • Self directed learning and use of resources • Creativity • Problem solving & critical thinking • Communication skill • Presentation skills • Group dynamics • Time management
	Activate deep learning
	Constructivist approach



DESIGNING A CASE SENARIO:

Cases of PBL sessions are constructed based on real life cases of prevalent conditions. Different disciplines are involved in construction of the particular case on a particular theme/topic. These themes/topics are chosen keeping in mind the provoking element for the students to provide a suitable trigger. For example PBL based on Iron deficiency anemia has been given title/ theme "KAHANI GHAR GHAR KI". Similarly, another theme used for PBL session based upon Goiter is "GALA PAR GYA GALEY".

Tutor key is also formulated by taking into consideration the input of all the relevant disciplines. This key includes:

1. Learning objectives
2. Content related to these objectives

3. Question and answers related to the case scenario
4. Conclusion

“This case with tutor key is handed over to the facilitator 1 week prior to the first session of PBL.”

SESSION I: “STRUCTURING”

- A predesigned **Paper Based Case Scenario** is introduced as a **“TRIGGER”** to the students during session I. (Tutor key is not provided to the students)
- Teacher act as a facilitator.
- Group leader, scribe and time keeper are assigned and their duties declared.
- Group leader ensures group dynamics to be followed including respect for other, allowing everyone to participate, giving importance to each other’s views, well disciplined class and time management.
- Session starts with introduction to key words and explanation.
- Students formulate their own learning objectives based upon different disciplines like physiology, anatomy, biochemistry, pharmacology, pathology, medicine, surgery etc

“7 JUMP STRATEGY”	
STEP 1	Identify and clarify unfamiliar terms presented in the scenario
STEP 2	Define the problem or problems to be discussed
STEP 3	“Brainstorming” session to discuss the problem, suggesting possible explanations on basis of prior knowledge
STEP 4	Review and arrange explanations into tentative solutions
STEP 5	Formulate learning objectives
STEP 6	Self -directed learning by the students at home
STEP 7	Presentation of the learning objectives and content studied

SELF-DIRECTED LEARNING (AT HOMES)

SESSION II: “IMPLEMENTATION”

- The learning objectives formulated in Session I are discussed in Session II. (as the students have studied and prepared it privately at homes)
- Students are instructed to make presentation of the required learning objectives and the the related content.
- The difficult areas are focused by the group and possible explanations are discussed.

FEEDBACK OF PBL SESSION:

- “Feedback” by the students as well as facilitator is given.
- Conclusion and ending remarks by the facilitator.

ASSESSMENT OF PBL SESSION:

Students during the session are assessed for the following components:

1. Knowledge (prior knowledge as well as contribution by self directed learning)
2. Active participation
3. Time management
4. Group dynamics
5. Generic skills including presentation skills, communication skills

RMU MODEL OF CASE BASED LEARNING (CBL)

INTRODUCTION
Case Based Learning (CBL) is one of the latest teaching and learning strategy being used in the medical education. The ultimate aim of CBL is to prepare the students for clinical practice by using the real life case scenarios. It puts theory into practice by applying knowledge to clinical cases. With case-based teaching, students develop skills in analytical thinking and reflective judgment by reading and discussing complex, real-life scenarios. This method is student-centered with intense interaction between participants as they build their knowledge and work together as a group to examine the case. CBL is discipline specific and the learning objectives are formulated according to the subject under consideration.
AT RAWALPINDI MEDICAL UNIVERSITY
<ul style="list-style-type: none"> • At Rawalpindi Medical University, CBL sessions are conducted as part of modular integrated curriculum. • CBL sessions are conducted within each module of first and second year MBBS (a total of 12 modules of both classes class every year) • CBL sessions are adjusted in time tables along with slots of skill labs and Small Group Discussions (SGD). • A specified number of large group interactive sessions (LGIS) are also conducted before the session to introduce the topics and providing overview of relevant difficult concepts.
HARDEN INTEGRATION LADDER
<ul style="list-style-type: none"> • CBL sessions conducted during the course of integrated modular curriculum makes the university stand at LEVEL 8 of Harden Integration Ladder “The Complementary programme” where the focus of teaching is theme or a topic where different disciplines can contribute.

TEACHING AND LEARNING STRATEGY:	<ul style="list-style-type: none"> • Small group activity single session activity (conducted in 5 batches of each class with further subdivisions of each batch into 4 sub-batches) • Student centered approach
OBJECTIVES:	Acquisition of knowledge and clinical reasoning
	Active participation of each and every student
	Clinical relevance to core subjects of basic sciences
	Develop generic competencies and attitudes among students <ul style="list-style-type: none"> • Team work • Chairing a group • Listening • Recording • Cooperation • Respect for colleagues' views • Critical evaluation of literature • Self directed learning and use of resources • Creativity • Problem solving & critical thinking • Communication skill • Presentation skills • Group dynamics • Time management
	Activate deep learning
	Provide opportunities for development of clinical reasoning and judgment
	Self directed learning

CONDUCTION OF CBL

THE CBL PROCESS AT RMU (SINGLE SESSION)

CBL cases are designed pre-hand and provided to the students on MS teams/ LMS with clearly defined learning objectives of the relevant subject of basic sciences

SELF DIRECTED LEARNING AT HOME

- **Paper based clinical case scenarios with leaning objectives (subject specific)**
- **Case discussion**
- **Identification of the learning resources**
- **Clinical relevance of the cases provided to the core knowledge of the subject**

DESIGNING A CASE SENARIO:

Case is designed based on real life clinical case scenarios. The cases are designed having a **theme like “cough”**. The learning objectives are focused towards a specific discipline of basic sciences like physiology, anatomy, biochemistry etc. It brings theory into practice. It induces more critical thinking skills. In CBL, both the student and faculty prepare in advance, and there is guidance to the discussion so that important learning points are covered. This is an example of integration within a subject. Students use higher order of cognition by the use of clinical case relevant to the topic taught resulting in achieving better learning learning.

The case is provided by the facilitator to the students before the session Learning objectives are provided in advance for a more focused study by the students and come well prepared for session.

Tutor key is also formulated by subject specialist of the relevant

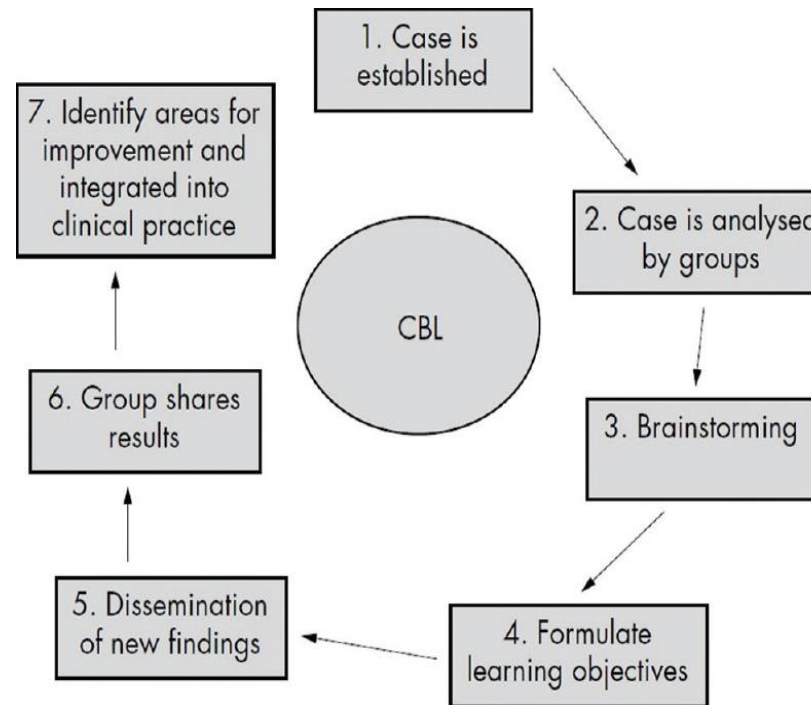
5. Content related to these objectives
6. Question and answers related to the case scenario
7. Conclusion

CBL SESSION:

- A predesigned **Paper Based Case Scenario** already provided
- Students come well prepared according to the learning
- Teacher act as a facilitator.
- Group leader, scribe and time keeper are assigned and their
- Group leader ensures group dynamics to be followed including participate, giving importance to each other’s views, well disciplined class and time management.
- Session starts with introduction to key words and explanation.
- Discussion starts with active participation of each and every student. The difficult areas are focused by the group and possible explanations are discussed.
- Teachers act as drivers of the session, the keep the students focused and intervene where necessary.

FEEDBACK OF CBL SESSION:

- **“Feedback”** by the students as well as facilitator is given.
- Conclusion and ending remarks by the facilitator.



of CBL. The mode is via MS Teams/ LMS. the students. This needs advanced studies ny

disciplines. This key includes:

to the students before the session. objectives.

duties declared. respect for other, allowing everyone to

ASSESSMENT OF CBL SESSION:

Students during the session are assessed for the following components:

6. Knowledge (prior knowledge as well as contribution by self directed learning)
7. Active participation
8. Time management
9. Group dynamics
10. Generic skills including presentation skills, communication skills

RMU MODEL OF SMALL GROUP DISCUSSION (SGD)

INTRODUCTION

Small-group discussion is a **student-centered methodology, that allows students to actively involve and be partners in the teaching-learning process**. Students interact with peers and instructors, discussing, and sharing ideas. They develop the ability to build consensus in a group.

AT RAWALPINDI MEDICAL UNIVERSITY

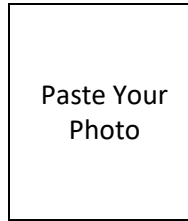
- At Rawalpindi Medical University, SGDs are conducted as a part of integrated curriculum.
- SGDs are conducted **every week** within each module of first and second year MBBS (a total of 12 modules of both classes class every year)
- It has replaced the traditional tutorial in the traditional curriculum.
- The basic objective of Small Group Discussion is “**reinforcement**” of the important topics taught previously in Large Group Interactive Session(LGIS).
- The SGDs are **topic based**, usually a topic is given to the students and discussion is done afterwards.

SGD SESSION:

- SGDs are conducted in every module per week.
- The topic based small group discussion is given a proper place in the time table before the module starts.
- The topics are adjusted in the time tables in alliance with the relevant topics being taught at Large Group Interactive Session (LGIS).
- The topics, time and venues are known to the students as they are written on time tables.
- Students are given some time for self-study.
- The teacher discusses the topic with the students keeping in mind the group dynamics and ensures active participation by the students.
- Ending note with conclusion.



**DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY**



First Year MBBS Batch 49 (Session 2022)

Students Scoring Performa for Case Based Learning (CBL), Small Group Discussion (SGD) / Tutorial Assessment

Student Name: _____

Roll No: _____

PracticalBatch: _____

Sr. No	Date	Name of Topic	Knowledge (3)	Skill (4)	Attitude /professionalism (3)	Total score obtaining out of 10	Teacher's Name	Teacher's signature

**OFFICE OF THE HEAD OF PHYSIOLOGY DEPARTMENT
RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
FIRST YEAR MBBS BLOCK - II PHYSIOLOGY RESULT ACCRODING TO NEW ASSESSMENT MODEL OF RMU "MUMTAHIN"**

Sr. #	Roll No.	Students Name	Marks											Countineous Internal Assessment (CIA)										Percentage of CIA/CIA Gauge of Zone	
			MSK-II Module (Module -3)					Blood & Immunity Module (Module -4)					OSPE	Grand Total of Marks	MSK-II Module			Blood Module			OSPE	LMS	Video Assisted Learning		Grand Total of CIA
			MCQS	SEQs	Theory Total	Viva	Grand Total	MCQS	SEQs	Theory Total	Viva	Grand Total			Theory CIA	Viva CIA	Total CIA	Theory CIA	Viva CIA	Total CIA					
			20	25	45	25	70	20	25	45	25	70			18	150	7	5	12	7						5	12	6	2	1	33
1	1	AAIMA ILYAS BAJWA	14	14	28	14	42	19	15	34	18	52	11	105	4	3	7	5	4	9	4	2	1	23	70
2	2	AAMINAH MUSHTAQ	18	15	33	15	48	20	15	35	17	52	8	108	5	3	8	5	3	9	3	2	1	24	72
3	3	AAMNA ZAMURAD KHAN	17	15	32	14	46	14	15	29	16	45	12	103	5	3	8	5	3	8	4	2	1	23	69
4	4	ADEELA SULTANA	18	16	34	15	49	18	15	33	15	48	12	109	5	3	8	5	3	8	4	2	1	23	71
5	5	AFIFA MUKHTAR	18	14	32	15	47	16	15	31	16	47	10	104	5	3	8	5	3	8	4	2	1	23	69
6	6	AIZA HAROON	18	17	35	20	55	19	15	34	20	54	12	121	5	4	9	5	4	9	4	1	1	25	75
7	7	AIZA IMRAN	17	15	32	19	51	20	15	35	16	51	11	113	5	4	9	5	3	9	4	2	1	25	75
8	8	AKHLAS FATIMA QURESHI	15	14	29	15	44	18	15	33	15	48	11	103	5	3	8	5	3	8	4	2	1	23	69
9	9	ALEENA JAVED	15	14	29	14	43	13	15	28	16	44	11	98	5	3	7	4	3	8	4	2	1	22	67
10	10	ALISHBA FARAZ	18	16	34	15	49	16	15	31	15	46	11	106	5	3	8	5	3	8	4	2	1	23	70
11	11	ALISHBA HASNAT	13	16	29	17	46	17	15	32	15	47	13	106	5	3	8	5	3	8	4	2	1	23	70
12	12	ALIZA KHAN	17	17	34	16	50	18	15	33	16	49	10	109	5	3	9	5	3	8	3	2	1	23	71
13	13	ALYSHA KHALIQ	15	13	28	16	44	19	15	34	16	50	11	105	4	3	8	5	3	9	4	2	1	23	69
14	14	AMBER LIAQUAT CHAUDHARY	13	12	25	16	41	12	15	27	14	41	12	94	4	3	7	4	3	7	4	2	1	21	63
15	15	AMINA KHAN	14	13	27	14	41	17	14	31	16	47	15	103	4	3	7	5	3	8	5	2	1	23	69
16	16	AMMARA KHALIL	19	19	38	15	53	16	15	31	13	44	14	111	6	3	9	5	3	8	5	2	1	24	73
17	17	AMMARA SARWAR	17	17	34	16	50	18	15	33	14	47	12	109	5	3	9	5	3	8	4	2	1	24	73
18	18	AMNA BATOOL	18	15	33	18	51	20	15	35	13	48	13	112	5	4	9	5	3	8	4	2	1	24	73
19	19	AMNA BINTE NAEEM	17	16	33	21	54	19	15	34	15	49	14	117	5	4	9	5	3	8	5	1	1	25	74
20	20	AMNA CHEEMA ANIQA AKSHID CHAUDHARY	13	12	25	13	38	14	15	29	15	44	14	96	4	3	7	5	3	8	5	2	1	22	66
21	22	ANIQ AKSHID CHAUDHARY	16	17	33	14	47	20	15	35	17	52	13	112	5	3	8	5	3	9	4	2	1	24	73
22	23	ANIQA SAFDAR	16	13	29	14	43	16	15	31	13	44	14	101	5	3	7	5	3	8	4	2	1	22	67
23	24	ANSA HABIB	15	16	31	12	43	19	15	34	17	51	11	105	5	2	7	5	3	9	4	2	1	23	70
24	25	AQSA BIBI	18	20	38	14	52	19	15	34	16	50	15	117	6	3	9	5	3	9	5	2	1	26	78
25	26	AQSA EMAN SHAHZAD	15	16	31	12	43	13	15	28	14	42	14	99	5	2	7	4	3	7	4	2	1	22	66
26	27	AREEBA ARSHAD	15	10	25	14	39	17	15	32	14	46	13	98	4	3	7	5	3	8	4	2	1	22	66
27	28	AREEBA MUSTAFA	18	17	35	14	49	18	15	33	17	50	10	109	5	3	8	5	3	9	4	2	1	24	72
28	29	AREEJ ASIF AWAN	17	16	33	13	46	18	15	33	15	48	14	108	5	3	8	5	3	8	5	2	1	24	72
29	30	AREEJ FATIMA	12	14	26	13	39	17	15	32	15	47	13	99	4	3	7	5	3	8	4	2	1	22	65
30	31	AREEJ-UL-EMAN	12	15	27	10	37	12	15	27	17	44	14	81	4	2	6	4	3	8	0	2	1	17	51
31	32	AREESHA FATIMA	18	14	32	13	45	20	15	35	16	51	13	109	5	3	8	5	3	9	4	1	1	22	67
32	34	AROOSHA WAHEED	17	17	34	17	51	16	15	31	16	47	13	111	5	3	9	5	3	8	5	2	1	24	74
33	35	ASNA ISRAR	19	13	32	17	49	20	13	33	17	50	12	111	5	3	8	5	3	9	4	2	1	24	72
34	36	AYESHA AHMED	17	15	32	18	50	17	15	32	17	49	9	108	5	4	9	5	3	8	3	2	1	23	70
35	37	AYESHA AJMAL	17	18	35	18	53	18	15	33	16	49	13	115	5	4	9	5	3	8	5	2	1	25	76
36	38	AYESHA HANIF	19	16	35	18	53	18	15	33	18	51	11	115	5	4	9	5	4	9	4	2	1	24	74
37	39	AYESHA IFTIKHAR	17	16	33	19	52	18	15	33	17	50	15	117	5	4	9	5	3	9	5	2	1	25	76
38	40	AYESHA NASIR	17	18	35	14	49	18	15	33	15	48	12	109	5	3	8	5	3	8	5	2	1	24	73
39	41	AYESHA NAWAZ	18	17	35	18	53	20	15	35	16	51	15	119	5	4	9	5	3	9	5	2	1	25	77
40	42	AYESHA NIGHAT	17	15	32	18	50	17	15	32	15	47	10	107	5	4	9	5	3	8	4	2	1	24	73
41	43	AYESHA SADIQA	15	15	30	15	45	14	15	29	15	44	10	99	5	3	8	5	3	8	4	2	1	22	67
42	44	AYESHA SIDDIQA	19	15	34	19	53	20	15	35	16	51	10	114	5	4	9	5	3	9	4	2	1	25	74

Sr. #	Roll No.	Students Name	Marks											Countineous Internal Assessment (CIA)										Percentage of CIA/CIA Gauge of Zone	
			MSK-II Module (Module -3)					Blood & Immunity Module (Module -4)					OSPE	Grand Total of Marks	MSK-II Module			Blood Module			OSPE	LMS	Video Assisted Learning		Grand Total of CIA
			MCQS	SEQs	Theory Total	Viva	Grand Total	MCQS	SEQs	Theory Total	Viva	Grand Total			Theory CIA	Viva CIA	Total CIA	Theory CIA	Viva CIA	Total CIA					
			20	25	45	25	70	20	25	45	25	70	18	158	7	5	12	7	5	12	6	2	1	33	
365	By Name	SHAKEEL AHMAD	16	4	20	8	28	6	7	13	10	23	4	55	3	2	5	2	2	4	3	1	0	13	38
366	By Name	AHMED JAWAD	17	6	23	14	37	19	9	28	13	41	6	84	4	3	6	4	3	7	3	2	1	20	59
367	By Name	TAWFIQ ULLAH	16	11	27	11	38	16	13	29	18	47	7	92	4	2	7	5	4	8	4	2	1	21	64
368	By Name	MUDASIR ALI				6	6	18	8	26	13	39	8	53	0	1	1	4	3	7	3	1	1	13	39
369	By Name	ILHAM AMEENI	16	14	30	16	46	17	15	32	13	45	10	101	5	3	8	5	3	8	4	2	1	22	68

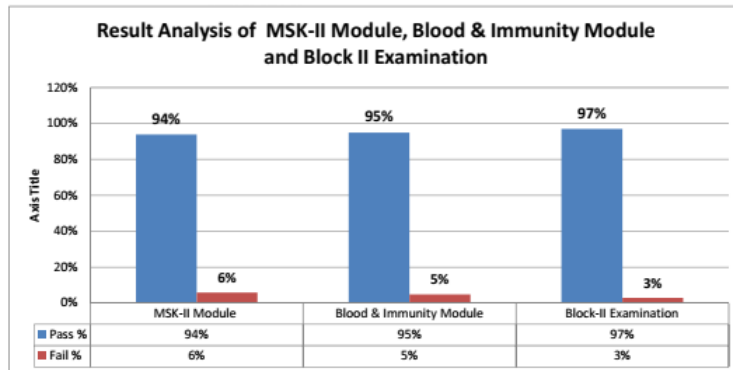
Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - 50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

MSK-II Module Result Analysis	
Total Students Appered	369
Pass	348
Pass %	94%
Fail	21
Fail %	6%

Blood Module Result Analysis	
Total Students Appered	367
Pass	347
Pass %	95%
Fail	20
Fail %	5%

Block-II Result Analysis	
Total Students Appered	369
Pass	356
Pass %	97%
Fail	13
Fail %	3%



Dr. Samia Sarwar
Head / Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Note: Only First & Last page of result of First Year MBBS, complied according to the newly designed Block-Ii (including MSK-II and Blood & immunity Modules) is being shared here for the interest of readers. This result consist of 9 pages.

**OFFICE OF THE HEAD OF PHYSIOLOGY DEPARTMENT
RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI
SECOND YEAR MBBS BLOCK - II PHYSIOLOGY RESULT ACCRODING TO NEW ASSESSMENT MODEL OF RMU "MUMTAHIN"**

Sr. #	Roll No.	Students Name	Marks											Countineous Internal Assessment (CIA)										Percentage of CIA/CIA Gauge of Zone	
			Reproduction Module (Module -3)					CNS Module (Module -4)					OSPE	Grand Total of Marks	Reproduction Module			CNS Module			OSPE	LMS	Video Assisted Learning		Grand Total of CIA
			MCQS	SEQs	Theory Total	Viva	Grand Total	MCQS	SEQs	Theory Total	Viva	Grand Total			Theory CIA	Viva CIA	Total CIA	Theory CIA	Viva CIA	Total CIA					
			20	25	45	25	70	20	25	45	25	70	18	158	7	5	12	7	5	12	6	2	1	33	
1	1	AAMNAH TARIQ	13	18	31	15	46	11	16	27	13	40	5	91	5	4	8	4	3	7	2	2	1	20	60
2	2	AAYET ZULFIQAR	16	18	34	16	50	17	16	33	13	46	11	107	6	4	9	6	3	9	4	2	1	25	76
3	3	ABEEHA ZAINAB	18	13	31	17	48	16	16	32	18	50	11	109	6	3	9	6	3	9	4	2	1	24	74
4	4	ABEER SAIF	16	15	31	19	50	17	15	32	13	45	8	103	6	3	9	6	3	9	3	2	1	23	70
5	5	ADEENA NAVEED	17	17	34	17	51	15	15	30	10	40	6	97	6	3	9	5	3	8	2	1	1	22	65
6	6	AIEMA HAMID	15	18	33	20	53	17	16	33	18	51	9	113	5	4	9	6	3	9	3	2	1	24	73
7	7	AIMAN AFKAR ABBASI	18	15	33	20	53	16	17	33	20	53	10	116	6	3	9	6	3	9	3	2	1	25	75
8	8	AIMAN AMIR	19	15	34	16	50	18	16	34	21	55	8	113	7	3	10	6	3	10	3	2	1	25	75
9	9	AIMAN ARIF	18	15	33	15	48	17	16	33	19	52	12	112	6	3	9	6	3	9	4	2	1	25	77
10	10	AIMAN MUGHAL	17	14	31	11	42	17	20	37	15	52	8	102	6	3	9	6	4	10	3	1	1	23	71
11	11	ALEEMA FATIMA	18	17	35	18	53	18	18	36	17	53	9	115	6	3	10	6	4	10	3	2	1	26	78
12	12	ALEENA SHAHZAD	18	18	36	16	52	16	17	33	13	46	8	106	6	4	10	6	3	9	3	2	1	25	74
13	14	ALISHBA SHAHID	17	16	33	20	53	17	16	33	15	48	8	109	6	3	9	6	3	9	3	2	1	24	73
14	15	ALIZAH FAISAL	19	16	35	20	55	17	17	34	15	49	11	115	7	3	10	6	3	9	4	2	1	26	78
15	16	ALIZEH NAEEM	18	14	32	16	48	17	17	34	15	49	13	110	6	3	9	6	3	9	4	2	1	26	78
16	17	ALVEENA KHAN LODHI	18	18	36	18	54	17	19	36	16	52	8	114	6	4	10	6	4	10	3	2	1	25	77
17	18	AMAIDA KHAN	16	15	31	16	47	17	17	34	17	51	11	109	6	3	9	6	3	9	4	2	1	25	75
18	19	AMARAH RASHID	18	17	35	15	50	19	16	35	15	50	11	111	6	3	10	7	3	10	4	2	1	26	79
19	20	AMBER SAJJAD	18	18	36	14	50	17	18	35	17	52	11	113	6	4	10	6	4	10	4	2	1	26	79
20	21	AMINA ARIF	16	13	29	14	43	18	16	34	13	47	13	103	6	3	8	6	3	10	4	2	1	25	76
21	22	AMMARA ATIQUE	17	19	36	15	51	17	17	34	13	47	10	108	6	4	10	6	3	9	3	2	1	25	77
22	23	AMNA ARIF	19	18	37	17	54	17	17	34	19	53	10	117	7	4	10	6	3	9	3	2	1	26	79
24	25	AMNA NOOR	18	18	36	16	52	19	18	37	15	52	11	115	6	4	10	7	4	10	4	2	1	27	81
25	26	AMNA REHMAN SHERWANI	18	18	36	16	52	17	14	31	15	46	11	109	6	4	10	6	3	9	4	2	1	25	77
26	27	AMNA TARIQ	16	14	30	15	45	17	14	31	16	47		92	6	3	8	6	3	9	0	0	1	18	55
27	28	ANOOSHA ADNAN	14	18	32	13	45	16	10	26	15	41	8	94	5	4	9	6	2	8	3	2	1	22	66
28	29	ANOOSHA QAISER	19	18	37	14	51	16	15	31	16	47	9	107	7	4	10	6	3	9	3	2	1	25	75
29	30	ANUM SAEED	17	14	31	15	46	15	20	35	19	54	8	108	6	3	9	5	4	9	3	2	1	24	72
30	31	AQSA MEHMOOD	18	17	35	16	51	15	16	31	15	46	8	105	6	3	10	5	3	8	3	2	1	24	72
31	32	AQSA TUFAIL	18	17	35	15	50	17	17	34	16	50	10	110	6	3	10	6	3	9	3	2	1	25	77
32	33	AREEJ GOHAR MEER	17	14	31	13	44	17	17	34	17	51	9	104	6	3	9	6	3	9	3	2	1	24	73
33	34	AROOJ ABBASI	20	18	38	12	50	18	18	36	17	53	11	114	7	4	11	6	4	10	4	2	1	27	82
34	35	AROOJ BIBI	18	18	36	18	54	19	16	35	19	54	11	119	6	4	10	7	3	10	4	2	1	26	80
35	36	AROOJ KIRAN	19	20	39	16	55	17	18	35	20	55	8	118	7	4	11	6	4	10	3	2	1	26	78
36	37	ASMA FATIMAH MALIK	18	18	36	15	51	15	17	32	21	53	11	115	6	4	10	5	3	9	4	2	1	25	76
37	38	ASMA JAVED	13	17	30	14	44	14	15	29	13	42	10	96	5	3	8	5	3	8	3	2	1	22	67
38	39	ASMA SAEED	18	18	36	15	51	20	18	38	20	58	12	121	6	4	10	7	4	11	4	2	1	28	83
39	40	AYESHA ABRAR	17	18	35	14	49	14	17	31	15	46	10	105	6	4	10	5	3	8	3	2	1	24	73
40	41	AYESHA ASHFAQ	18	17	35	13	48	19	18	37	19	56	12	116	6	3	10	7	4	10	4	2	1	27	82
41	43	AYESHA HASSAN	19	16	35	13	48	17	15	32	19	51	8	107	7	3	10	6	3	9	3	2	1	24	74
42	44	AYESHA MASOOD	17	16	33	20	53	18	17	35	20	55	10	118	6	3	9	6	3	10	3	2	1	25	76

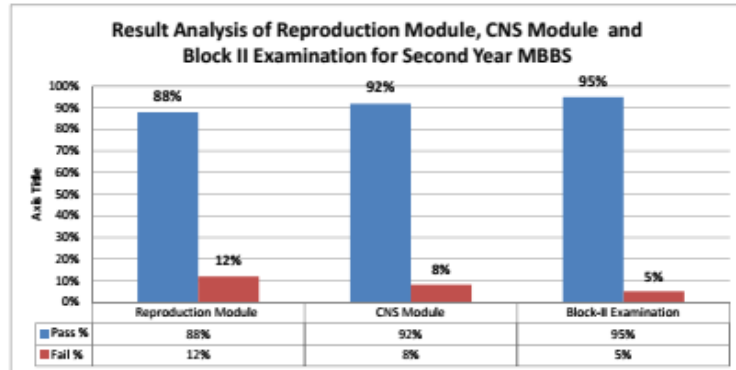
Sr. #	Roll No.	Students Name	Marks											Countinuous Internal Assessment (CIA)										Percentage of CIA/CIA Gauge of Zone	
			Reproduction Module (Module -3)					CNS Module (Module -4)					OSPE	Grand Total of Marks	Reproduction Module			CNS Module			OSPE	LMS	Video Assisted Learning		Grand Total of CIA
			MCQs	SEQs	Theory Total	Viva	Grand Total	MCQs	SEQs	Theory Total	Viva	Grand Total			Theory CIA	Viva CIA	Total CIA	Theory CIA	Viva CIA	Total CIA					
			20	25	45	25	70	20	25	45	25	70			7	5	12	7	5	12					
352	368	BILAL SADIQ	18	16	34		34	16	14	30	21	51	16	101	6	3	10	6	3	8	5	1	1	25	76
353	369	NOOR RIZWAN AHMED	12	17	29	13	42	18	15	33	13	46	11	99	4	3	8	6	3	9	4	1	1	23	68
354	370	FARAZ HASSAN ALI	15	10	25		25	13	9	22	19	41		66	5	2	7	5	2	6	0	0	1	15	44
355	371	MUQADDAS KHAN	16	18	34		34	15	17	32	13	45	9	88	6	4	9	5	3	9	3	2	1	24	72
356	372	MUSARAT SANGTHONG	16	13	29		29	13	14	27	15	42	13	84	6	3	8	5	3	7	4	2	1	23	69
357	373	WAFFA KHAN	15	16	31		31	18	14	32	13	45	9	85	5	3	8	6	3	9	3	1	1	23	68
358	374	AHMED BASIM JAMIL													0	0	0	0	0	0	0	0	0	0	0
359	375	NIDA NISAR	12	14	26	12	38	12	13	25	15	40	7	85	4	3	7	4	3	7	2	2	1	19	58

Gauge for Continuous Internal Assessment (CIA)					
Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - 50%	51 - 60%	61 - 70%	71 - 80%	81 - 100%

MSK-II Module Result Analysis	
Total Students Appered	354
Pass	313
Pass %	88%
Fail	41
Fail %	12%

Blood Module Result Analysis	
Total Students Appered	349
Pass	320
Pass %	92%
Fail	29
Fail %	8%

Block-II Result Analysis	
Total Students Appered	354
Pass	336
Pass %	95%
Fail	18
Fail %	5%



Dr. Samia Sarwar
Head / Professor of Physiology
Rawalpindi Medical University
Rawalpindi

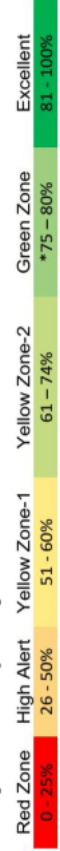
Note: Only First & Last page of result of Second Year MBBS, complied according to the newly designed Block-Ii (including Reproduction and CNS Modules) is being shared here for the interest of readers. This result consist of 9 pages.

DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI.
PHYSIOLOGY AGGREGATED ATTENDANCE RECORD OF FIRST YEAR MBBS
SESSION 2021-2022
(Blood & Immunity Module)

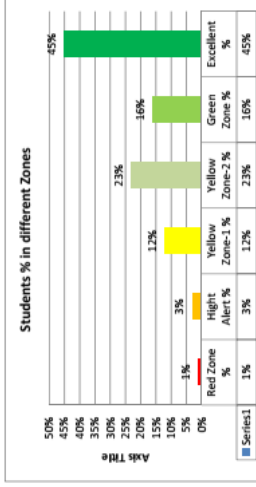
Roll No.	Student Name	Theory						Skill Lab			Total Agg	Zone of Attendance	
		Lecture/LGIS		SGD/CBL		Total	Attn	%	Total	Attn			%
		Total	%	Total	Attn								
1	AAIMA ILYAS BAJWA	19	19	100	4	4	100	4	4	100	100	Excellent	
2	AAMINAH MUSHTAQ	19	10	53	4	3	75	4	3	75	68	Yellow-II	
3	AAMNA ZAMIRAD KHAN	19	16	84	4	4	100	4	3	75	86	Excellent	
4	ADEELA SULTANA	19	12	63	4	3	75	4	4	100	79	Green	
5	AFIFA MUKHTAR	19	13	68	4	4	100	4	3	75	81	Excellent	
6	AIZA HAROON	19	14	74	4	4	100	4	3	75	83	Excellent	
7	AIZA IMRAN	19	13	68	4	4	100	4	4	100	89	Excellent	
8	AKHLAS FATIMA QURESHI	19	13	68	4	4	100	4	3	75	81	Excellent	
9	ALEENA JAVED	19	15	79	4	4	100	4	4	100	93	Excellent	
10	ALISHBA FARAZ	19	16	84	4	4	100	4	4	100	95	Excellent	
11	ALISHBA HASNAT	19	14	74	4	4	100	4	3	75	83	Excellent	
12	ALIZA KHAN	19	9	47	4	4	100	4	2	50	66	Yellow-II	
13	ALYSHA KHALIQ	19	8	42	4	4	100	4	2	50	64	Yellow-II	
14	AMBER LIAQUAT CHAUDHARY	19	10	53	4	4	100	4	4	100	84	Excellent	
15	AMINA KHAN	19	16	84	4	4	100	4	3	75	86	Excellent	
16	AMMARA KHALIL	19	9	47	4	4	100	4	2	50	66	Yellow-II	
17	AMMARA SARWAR	19	13	68	4	3	75	4	3	75	73	Yellow-II	
18	AMNA BATOOL	19	17	89	4	4	100	4	3	75	88	Excellent	
19	AMNA BINTE NAEEM	19	14	74	4	1	25	4	4	100	66	Yellow-II	
20	AMNA CHEEMA	19	13	68	4	4	100	4	4	100	89	Excellent	
21	AMNA ZAFAR	19	0	0	4	0	0	4	0	0	0	Red	
22	ANIQA ARSHAD CHAUDHARY	19	14	74	4	4	100	4	3	75	83	Excellent	
23	ANIQA SAFFAR	19	12	63	4	4	100	4	4	100	88	Excellent	
24	ANSA HABIB	19	9	47	4	3	75	4	4	100	74	Yellow-II	
25	AQSA BIBI	19	16	84	4	3	75	4	4	100	86	Excellent	
26	AQSA EMAN SHAHZAD	19	10	53	4	3	75	4	3	75	68	Yellow-II	
27	AREEBA ARSHAD	19	13	68	4	3	75	4	4	100	81	Excellent	
28	AREEBA MUSTAFA	19	13	68	4	4	100	4	4	100	89	Excellent	
29	AREEJ ASIF AWAN	19	12	63	4	3	75	4	3	75	71	Yellow-II	
30	AREEJ FATIMA	19	10	53	4	3	75	4	4	100	76	Green	
31	AREEJ-UL-EMAN	19	19	100	4	4	100	4	4	100	100	Excellent	
32	ARESHA FATIMA	19	10	53	4	3	75	4	4	100	76	Green	
33	AROOPA IFTIKHAR	19	0	0	4	0	0	4	0	0	0	Red	
34	AROOSHA WAHEED	19	13	68	4	4	100	4	4	100	89	Excellent	
35	ASNA ISRAR	19	13	68	4	4	100	4	3	75	81	Excellent	
36	AYESHA AHMED	19	16	84	4	4	100	4	4	100	95	Excellent	
37	AYESHA AJMAL	19	17	89	4	4	100	4	3	75	88	Excellent	
38	AYESHA HANIF	19	19	100	4	4	100	4	4	100	100	Excellent	
39	AYESHA IFTIKHAR	19	18	95	4	4	100	4	3	75	90	Excellent	
40	AYESHA NASIR	19	13	68	4	4	100	4	4	100	89	Excellent	
41	AYESHA NAWAZ	19	14	74	4	4	100	4	4	100	91	Excellent	
42	AYESHA NIGHAT	19	13	68	4	4	100	4	2	50	73	Yellow-II	
43	AYESHA SADIQA	19	11	58	4	4	100	4	2	50	69	Yellow-II	
44	AYESHA SIDDIQA	19	15	79	4	4	100	4	4	100	93	Excellent	
45	AQSA	19	16	84	4	4	100	4	3	75	86	Excellent	
46	AYESHA ZAFAR	19	13	68	4	3	75	4	4	100	81	Excellent	
47	AYZA TARIQ	19	11	58	4	3	75	4	4	100	78	Green	
48	AZIZ FATIMA	19	13	68	4	4	100	4	3	75	81	Excellent	

Roll No.	Student Name	Theory				Skill Lab				Total Agg	Zone of Attendance			
		Lecture / LGIS		SGD/CBL		Total		Attn				Total	Attn	%
		Total	%	Total	%	Total	%	Total	%					
365	MR AMIR ALI	19	16	84	5	4	80	3	3	100	88	Excellent		
366	MAHRUKH SAOOD BAIWA	19	0	0	5	3	60	3	3	100	53	Yellow - I		
367	HAMAS UL HUDAIBIA	19	16	84	5	4	80	3	3	100	88	Excellent		
368	BARERA QAMAR UL ZAMAN	19	14	74	5	4	80	3	3	100	85	Excellent		
369	MISBAH SALEEM	19	14	74	5	4	80	3	3	100	85	Excellent		
370	ALI HANZA	19	17	89	5	3	60	3	3	100	83	Excellent		
371	DEEMA ABDUR REHMAN	19	15	79	5	4	80	3	3	100	86	Excellent		
372	IMTINAN ALI	19	12	63	5	3	60	3	3	100	74	Yellow-II		
373	MUHAMMAD ARIF	19	16	84	5	3	60	3	3	100	81	Excellent		
374	ASRA JAVED	19	1	5	5	3	60	3	3	100	55	Yellow - I		
375	SHAMSUL ARFEEN	19	10	53	5	3	60	3	3	100	71	Yellow-II		
376	MUSKAN HAMEED	19	14	74	5	3	60	3	3	100	78	Green		
377	MUHAMMAD ALI KHAN	19	15	79	5	3	60	3	3	100	80	Green		
	SEFAT ULLAH	19	18	95	5	3	60	3	3	100	85	Excellent		
	REHMAT GUL	19	18	95	5	3	60	3	3	100	85	Excellent		
	SHOAIB SHAGIRAL	19	16	84	5	3	60	3	3	100	81	Excellent		
	SHARBEEL AHMAD	19	17	89	5	3	60	3	3	100	83	Excellent		
	AHMED JAWAD	19	16	84	5	3	60	3	3	100	81	Excellent		
	TAWFIQ ULLAH	19	15	79	5	3	60	3	3	100	80	Green		
	MUDASIR	19	16	84	5	3	60	3	3	100	81	Excellent		
	ILHAM AMEENI	19	17	89	5	3	60	3	3	100	83	Excellent		

Gauge for Attendance percentage



Students Percentage in different Zones	%	NO. OF Student
Red Zone %	1%	5
High Alert %	3%	13
Yellow Zone-1 %	12%	45
Yellow Zone-2 %	23%	87
Green Zone %	16%	60
Excellent %	45%	171



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Rawalpindi

Note: Only the First & Last page of the Attendance with analysis of Blood & Immunity Module of First Year MBBS according to newly designed attendance gauge is being shared here for the interest of the reader's, this attendance comprises of 8 pages.

DEPARTMENT OF PHYSIOLOGY
RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI.
AGGREGATED ATTENDANCE RECORD OF SECOND YEAR MBBS YEAR 2022
(CNS Module)

Roll No.	Student Name	Theory						Skill Lab			Total Avg	Zone of Attendance	
		Lecture / LGIS		SGD / CBL		Total	Attn	%	Total	Attn			%
		Total	Attn	%	Total									Attn	%
1	AAMNAH TARIQ	28	15	54	5	5	100	5	5	100	85	Excellent	
2	AAYET ZULFIQAR	28	22	79	5	5	100	5	5	100	93	Excellent	
3	ABEEHA ZAINAB	28	23	82	5	5	100	5	5	100	94	Excellent	
4	ABEER SAIF	28	20	71	5	5	100	5	4	80	84	Excellent	
5	ADEENA NAVEED	28	8	29	5	1	20	5	3	60	36	High Alert	
6	AIEMA HAMID	28	21	75	5	4	80	5	5	100	85	Excellent	
7	AIMAN AFKAR ABBASI	28	17	61	5	4	80	5	4	80	74	Yellow-2	
8	AIMAN AMIR	28	23	82	5	5	100	5	5	100	94	Excellent	
9	AIMAN ARIF	28	23	82	5	4	80	5	3	60	74	Yellow-2	
10	AIMAN MUGHAL	28	18	64	5	4	80	5	4	80	75	Green	
11	ALEEMA FATIMA	28	22	79	5	5	100	5	4	80	86	Excellent	
12	ALEENA SHAHZAD	28	20	71	5	5	100	5	4	80	84	Excellent	
14	ALISHBA SHAHID	28	14	50	5	5	100	5	5	100	83	Excellent	
15	ALIZAH FAISAL	28	23	82	5	5	100	5	5	100	94	Excellent	
16	ALIZEH NAEEM	28	22	79	5	5	100	5	4	80	86	Excellent	
17	ALVEENA KHAN LODHI	28	24	86	5	5	100	5	4	80	89	Excellent	
18	AMAIDA KHAN	28	25	89	5	4	80	5	5	100	90	Excellent	
19	AMARAH RASHID	28	24	86	5	5	100	5	4	80	89	Excellent	
20	AMBER SAJJAD	28	20	71	5	5	100	5	4	80	84	Excellent	
21	AMINA ARIF	28	25	89	5	5	100	5	5	100	96	Excellent	
22	AMMARA ATIQUJE	28	19	68	5	4	80	5	4	80	76	Green	
23	AMNA ARIF	28	22	79	5	5	100	5	3	60	80	Green	
24	SYEDA AFSHEEN SALEEM	28	0	0	5	0	0	5	0	0	0	Red	
25	AMNA NOOR	28	23	82	5	5	100	5	5	100	94	Excellent	
26	AMNA REHMAN SHERWANI	28	17	61	5	4	80	5	4	80	74	Yellow-2	
27	AMNA TARIQ	28	22	79	5	5	100	5	5	100	93	Excellent	
28	ANOOSHA ADNAN	28	21	75	5	5	100	5	5	100	92	Excellent	
29	ANOOSHA QAISER	28	18	64	5	5	100	5	3	60	75	Green	
30	ANUM SAEED	28	22	79	5	5	100	5	5	100	93	Excellent	
31	AQSA MEHMOOD	28	21	75	5	5	100	5	5	100	92	Excellent	
32	AQSA TUFAIL	28	21	75	5	5	100	5	5	100	92	Excellent	
33	AREEJ GOHAR MEER	28	20	71	5	3	60	5	1	20	50	High Alert	
34	AROJ ABBASI	28	23	82	5	5	100	5	5	100	94	Excellent	
35	AROJ BIBI	28	25	89	5	4	80	5	4	80	83	Excellent	
36	AROJ KIRAN	28	28	100	5	5	100	5	5	100	100	Excellent	

Date: 4th September 2022

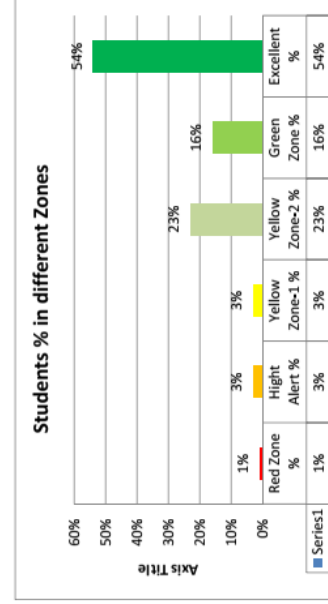
Page 1 Dr. Samia Sarwar, Head/Professor of Physiology, RMU, Rawalpindi

Roll No.	Student Name	Theory						Skill Lab		Total Avg	Zone of Attendance	
		Lecture / LGIS		SGD / CBL		Total	Attn %	Total	Attn %			
		Total	Attn %	Total	Attn %							
372	MUSARAT SANGTHONG	28	19	68	5	5	100	5	5	100	89	Excellent
373	WAFFA KHAN	28	21	75	5	5	100	5	5	100	92	Excellent
374	AHMED BASIM JAMIL	28	0	0	5	5	100	5	5	100	67	Yellow-2
375	NIDA NISAR	28	13	46	5	5	100	5	5	100	82	Excellent

Gauge for Attendance percentage



Students Percentage in different Zones	%	No. of Students
Red Zone %	1%	4
Hight Alert %	3%	11
Yellow Zone-1 %	3%	9
Yellow Zone-2 %	23%	81
Green Zone %	16%	59
Excellent %	54%	195

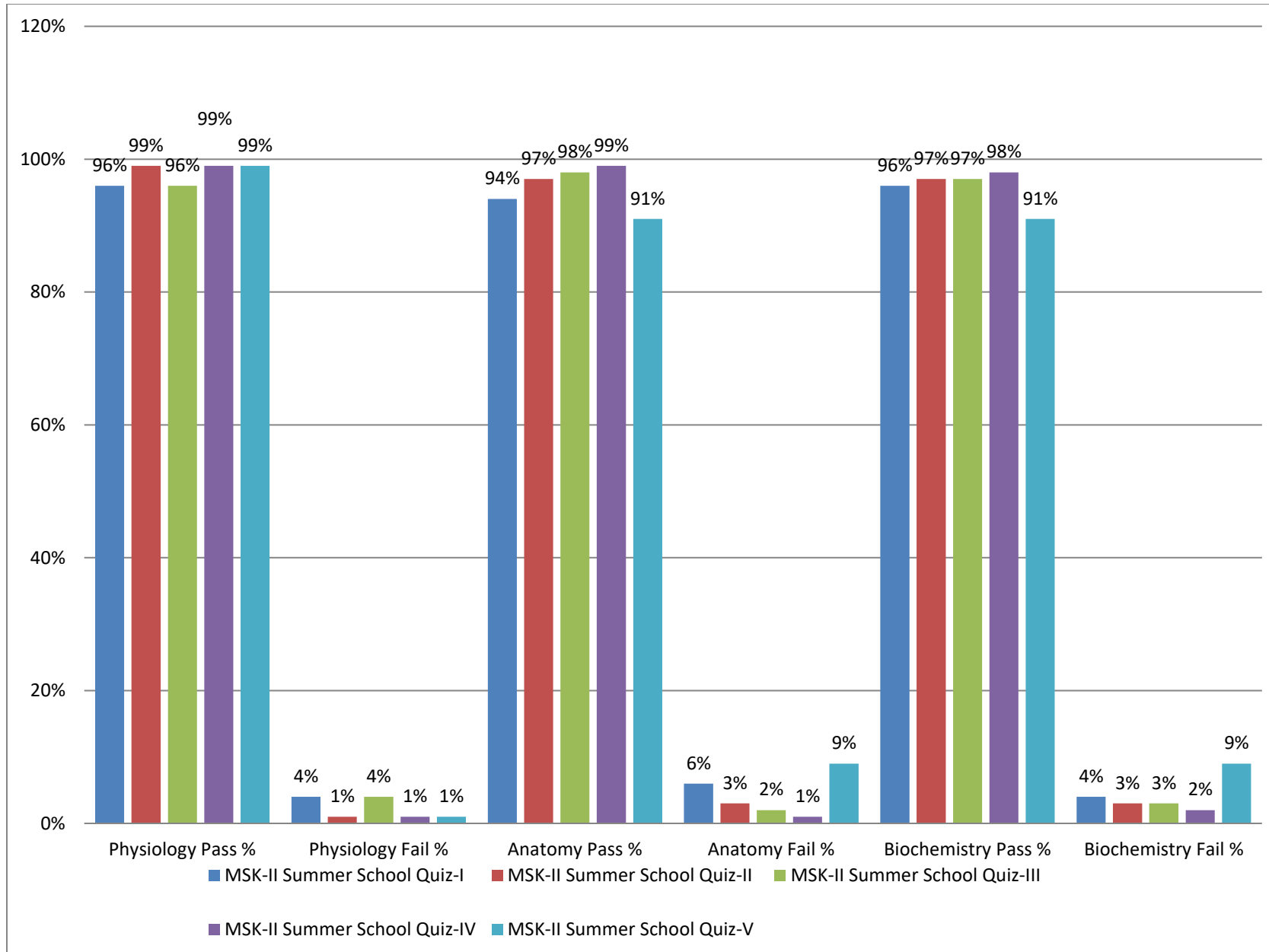


Dr. Samia Sarwar
 Head / Professor of Physiology
 Rawalpindi Medical University
 Rawalpindi

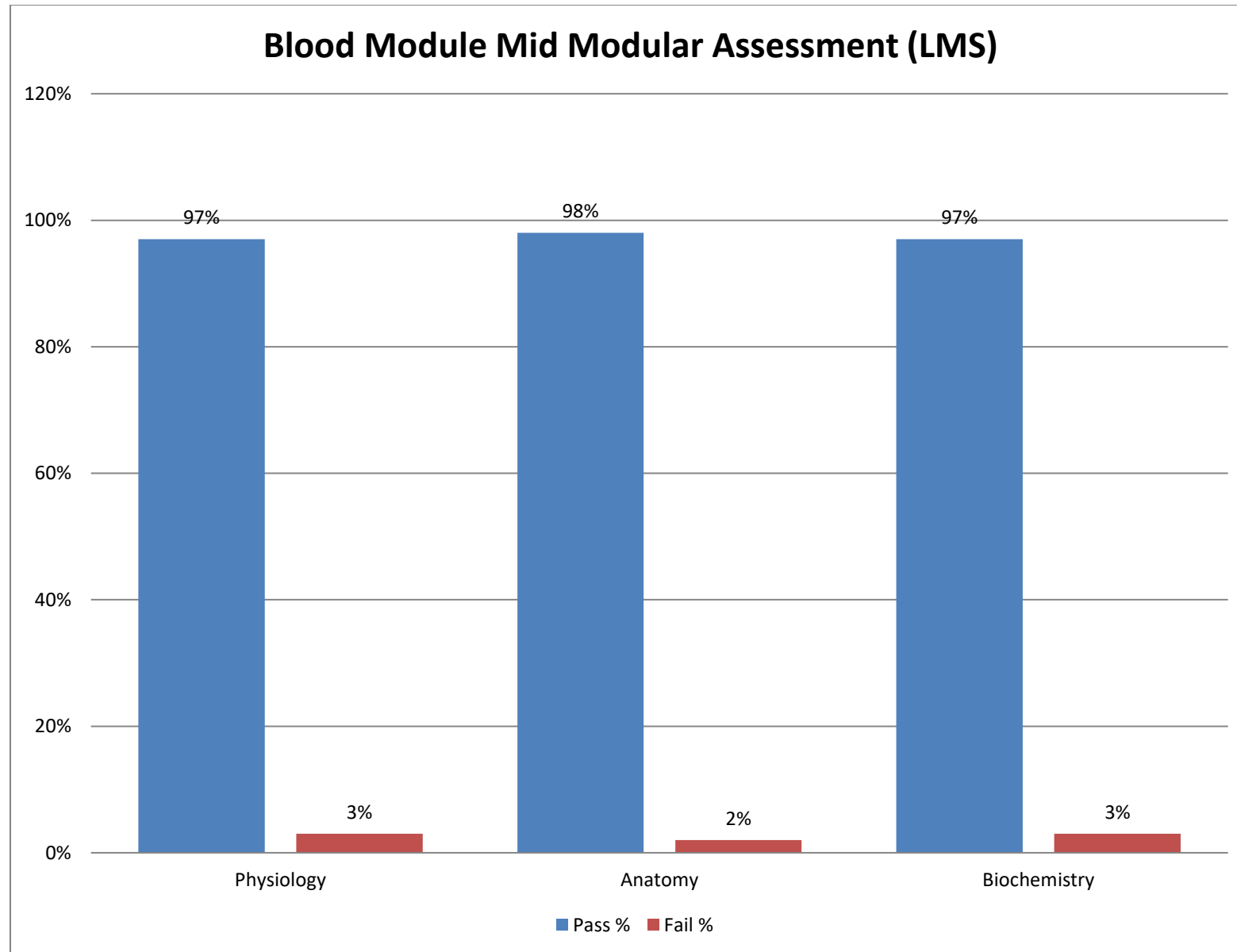
Note: Only the First & Last page of the Attendance with analysis of CNS Module of Second Year MBBS according to newly designed attendance gauge is being shared here for the interest of the reader's, this attendance comprises of 9 pages.

**DETAILED ANALYSIS OF QUIZ RESULTS CONDUCTED ON LEARNING MANAGEMENT SYSTEM (LMS) FOR FIRST & SECOND
YEAR MBBS**

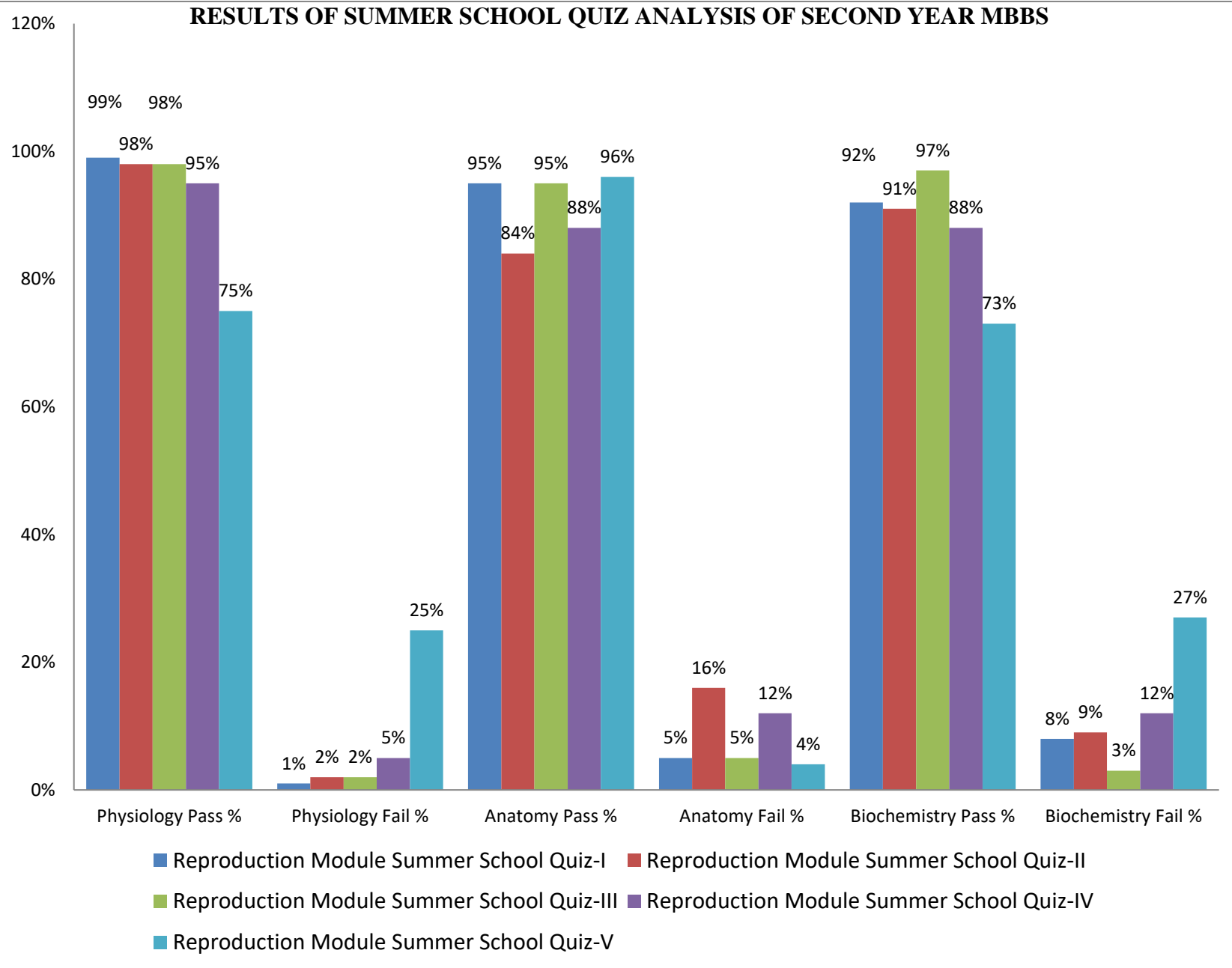
RESULTS OF SUMMER SCHOOL QUIZ ANALYSIS OF FIRST YEAR MBBS



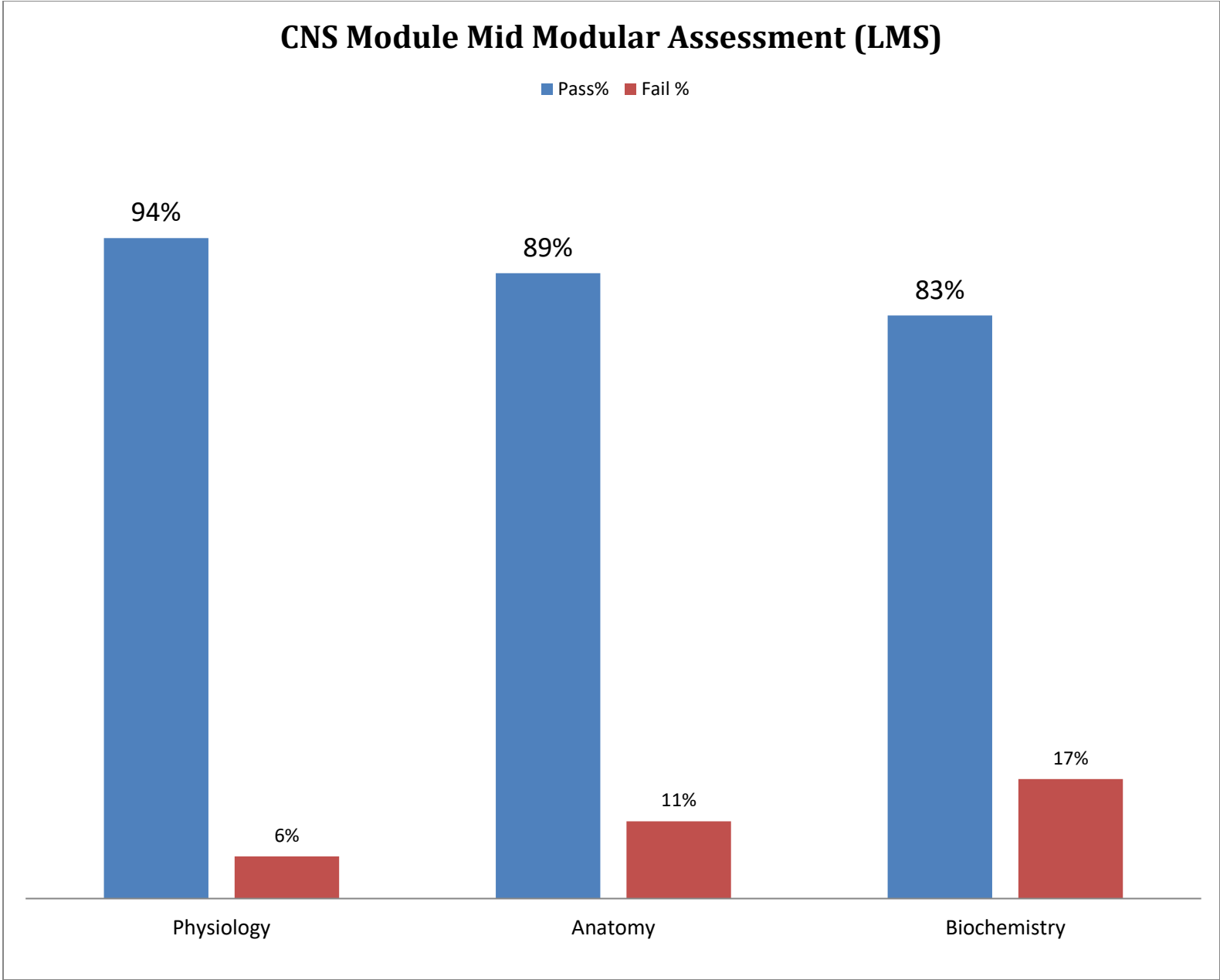
MID MODULAR RESULT ANALYSIS OF BLOOD MODULE FOR FIRST YEAR MBBS



RESULTS OF SUMMER SCHOOL QUIZ ANALYSIS OF SECOND YEAR MBBS



MID MODULAR RESULT ANALYSIS OF CNS MODULE FOR SECOND YEAR MBBS



Students Academic Record/Monitoring Card for Physiology



DEPARTMENT OF PHYSIOLOGY RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI FIRST YEAR MBBS

Class Roll No. _____ University Roll No. _____

Batch: _____ Session: _____

Name: _____

Date of Birth: _____ Religion: _____

Student Contact # _____

Student's Email Address: _____

Date of Admission: _____

Boarder / Non Boarder: _____

Temporary Address: _____

Permanent Address: _____

Guardian's Detail:

Father's Name: _____ Occupation: _____

Mother's Name: _____ Occupation: _____

Father's Contact No. _____

Guardian's Contact No. _____



Block – I		From:		To:	
Modular Assessment	Theory	Viva	Total	Continuous Internal Assessment (CIA) % weightage	Attendance Record
	Medical Knowledge (MK)					Percentage	Category
Foundation Module				Marks	
MSK-I Module				Percentage	
Block Assessment	Theory (MK)	OSPE	Total	Category of CIA	
		Skill / psychomotor			
Block – I Assessment					

Block – II		From:		To:	
Modular Assessment	Theory	Viva	Total	Continuous Internal Assessment (CIA) % weightage	Attendance Record
	Medical Knowledge (MK)					Percentage	Category
MSK-II Module				Marks	
Blood & Immunity Module				Percentage	
Block Assessment	Theory (MK)	OSPE	Total	Category of CIA	
		Skill / psychomotor			
Block – II Assessment					

Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%

*75% is eligibility criteria for appearing in professional examination.

Block – II	From:		To:	
	Theory Medical Knowledge (MK)	Viva	Total	Continuous Internal Assessment (CIA) _____% weightage
Modular Assessment				Attendance Record Percentage Category
CVS Module			Marks	
Respiration Module			Percentage	
Block Assessment	Theory (MK)	OSPE Skill / psychoomotor	Total	Category of CIA
	Block – III Assessment			

Send – Up Examination	From:		To:	
Send – Up Examination	Theory	Viva	OSPE	Total
Block – I				
Block – II				
Block – III				
Grand Total				

Continuous Internal Assessment (CIA)

Total marks of CIA obtained including all three blocks (Block-I, Block-II & Block-III)

Final percentage of CIA achieved	Final category of CIA achieved

Gauge for Continuous Internal Assessment (CIA)

Red Zone High Alert 26 - *50% Yellow Zone 51 - 60% Green Zone 61 – 70% Excellent 71 – 80% Extra Ordinary 81 - 100%
*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone High Alert 26 - 50% Yellow Zone-1 51 - 60% Yellow Zone-2 61 – 74% Green Zone *75 – 80% Excellent 81 - 100%
*75% is eligibility criteria for appearing in professional examination.

ATTENDANCE RECORD

Module / Block	Lecture	Skill Lab	CBL	SGD / Tutorial	Aggregate	Category
Foundation Module						
MSK-I Module						
Block - I						
MSK-II Module						
Blood & Immunity Module						
Block - II						
CVS Module						
Respiration Module						
Block - III						
Total Aggregate						

Gauge for Continuous Internal Assessment (CIA)

Red Zone 0 - 25% High Alert 26 - 50% Yellow Zone 51 - 60% Green Zone 61 - 70% Excellent 71 - 80% Extra Ordinary 81 - 100%
 *50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone 0 - 25% High Alert 26 - 50% Yellow Zone-1 51 - 60% Yellow Zone-2 61 - 74% Green Zone *75 - 80% Excellent 81 - 100%
 *75% is eligibility criteria for appearing in professional examination.

Designed By
 Prof. Dr. Samia Sarwar
 20th May 2022

Dr. Samia Sarwar
 Head / Professor of Physiology
 Dean Allied Health Sciences
 Rawalpindi Medical University
 Rawalpindi

11. Section: L
GENERAL FORMAT OF LECTURES & THEORY PAPER (MCQS, SEQS) FOR
PRE CLINICAL, PARA CLINICAL & CLINICAL SUBJECTS IN MBBS COURSE

Model Format for Lectures of Pre Clinical Subjects (Physiology, Anatomy, Biochemistry) for 1st& 2nd Year MBBS

S.No	Headings	Approximate %
1	Title	
2	Learning Objectives	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Research	3%
7	Ethics	2%

Model Format for Lectures of Para Clinical Subjects (Pharmacology, Forensic Medicine, Pathology, Community Medicine) for 3rd& 4th Year MBBS

S.No	Headings	Approximate %
1	Title	
2	Learning Objectives	
3	Spiral Integration / Revisit	5%
4	Horizontal Integration	10%
5	Core Concepts of the topic	50%
7	Vertical Integration	20%
8	Research	10%
9	Ethics	5%

Model Format for Lectures of Clinical Subjects (Medicine, Surgery, Gynecology &Obstetrics, ENT, Eye) for Final Year MBBS

S.No	Headings	Approximate %
1	Title	
2	Learning Objectives	
3	Spiral Integration / Revisit	5%
4	Horizontal Integration	10%
5	Core Concepts of the topic	35%
7	Vertical Integration	30%
8	Research	15%
9	Ethics	5%

Model Format for MCQS of Pre Clinical Subjects (Physiology, Anatomy, Biochemistry)

Sr. #	Domains of Assessment	Level of Integration	Percentage
1.	Physiology, Anatomy, Biochemistry	Horizontal Integration	5%+5%=10%
2.	Core Concepts	Core Concepts	60%
3.	Clinical Concepts	Vertical Integration	20%
4.	Research Year 1 & 2	Longitudinal running modules	5%
5.	Ethics Year 1 & 2	Longitudinal running modules	5%

Model Format for SEQs of Pre Clinical Subjects (Physiology, Anatomy, Biochemistry)

Sr. #	Domains of Assessment	Level of Integration	Percentage
6.	Physiology, Anatomy, Biochemistry	Horizontal Integration	5%+5%=10%
7.	Core Concepts	Core Concepts	70%
8.	Clinical Concepts	Vertical Integration	20%

Model Format for MCQS of Para Clinical Subjects (Pharmacology, Forensic Medicine, Pathology, Community Medicine)

Sr. #	Domains of Assessment	Level of Integration	Percentage
1.	Revisit of Anatomy, Physiology & Biochemistry	Spiral Integration	5%
2.	Pharmacology, Forensic Medicine & General Pathology (For 3 rd Year only)	Horizontal Integration	5%+5%=10%
	Community Medicine & Special Pathology (For 4 th Year only)	Horizontal Integration	10%
3.	Core Concepts	Core Concepts	45%
4.	Clinical Concepts	Vertical Integration	25%
5.	Research Year 3 & 4	Longitudinal running modules	10%
6.	Ethics Year 3 & 4	Longitudinal running modules	5%

Model Format for SEQs of Para Clinical Subjects (Pharmacology, Forensic Medicine, Pathology, Community Medicine)

Sr. #	Domains of Assessment	Level of Integration	Percentage
1.	Pharmacology, Forensic Medicine, Pathology, Community Medicine	Horizontal Integration	5%+5%=10%
2.	Core Concepts	Core Concepts	70%
3.	Clinical Concepts	Vertical Integration	20%

Model Format for MCQS of Clinical Subjects (Medicine, Surgery, Gynecology & Obstetrics, ENT, Eye)

Sr. #	Domains of Assessment	Level of Integration	Percentage
1.	Revisit of Anatomy, Physiology & Biochemistry, Pharmacology, Forensic Medicine, Pathology & Community Medicine	Spiral Integration	10%
2.	Medicine, Surgery, Gynecology & Obstetrics, ENT, Eye	Horizontal Integration	20%
3.	Core Concepts	Core Concepts	40%
4.	Research Final Year	Longitudinal running modules	20%
5.	Ethics Final Year	Longitudinal running modules	10%

Model Format for SEQs of Clinical Subjects (Medicine, Surgery, Gynecology & Obstetrics, ENT, Eye)

Sr. #	Domains of Assessment	Level of Integration	Percentage
1.	Medicine, Surgery, Gynecology & Obstetrics, ENT, Eye	Horizontal Integration	20%
2.	Core Concepts	Core Concepts	80%

OFFICE OF THE HEAD OF PHYSIOLOGY DEPARTMENT
CLINICALLY ORIENTED & INTEGRATED MODULAR CURRICULUM SEND UP / FIRST PROFESSIONAL
TABLE OF SPECIFICATION OF ASSESSMENT OF THEORY / OSPE & VIVA VOCE FOR THE SUBJECT OF PHYSIOLOGY
BATCH 49 FIRST YEAR MBBS

Total Marks of Send Up / First Professional = 231 Marks (70% of the Total Marks, 30% is CIA)

		ASSESSMENT OF THEORY COMPONENT								
Block	Sr. #	Name of Module	MCQs (Total Marks 41)		Domain of cognition		SEQs (10x8=80Marks) (8 Marks each)	Domain of cognition	Total Marks (MCQs+SEQs+ viva)	
Block – 1	Module -1	Foundation	5	10	C1	2	1		Total: 26 marks Percentage: 22%	
					C2	2				
					C3	1				
	Module -2	Musculoskeletal – I	5		C1	2				1
					C2	2				
					C3	1				
Block – 2	Module -3	Musculoskeletal – II	6	13	C1	2	2	C1 = 30% C2 = 50% C3 = 20% Total = 100%	Total: 45 marks Percentage: 37%	
					C2	2				
					C3	2				
	Module -4	Blood & Immunity	7		C1	2				2
					C2	3				
					C3	2				
Block – 3	Module -5	Cardiovascular system	10	18	C1	3	2		Total: 50 marks Percentage: 41%	
					C2	4				
					C3	3				
	Module -6	Respiratory	8		C1	2				2
					C2	4				
					C3	2				
Grand Total Marks of Theory Assessment				MCQs = 41 + SEQs = 80=121 Marks						

TABLE OF SPECIFICATION VIVA VOCE COMPONENT			
Viva Voce by internal Examiner = 30 Marks		Total Marks of Viva voce = 60 Marks	
Viva Voce by External Examiner = 30 Marks			
VIVA FOR INTERNAL & EXTERNAL EACH			
Internal		External	
Block- I = 7 (22%)		Block- I = 7 (22%)	
Block- II = 11 (37%)		Block- II = 11 (37%)	
Block- III= 12 (41%)		Block- III= 12 (41%)	
TABLE OF SPECIFICATION OSPE / SKILL LAB COMPONENT			
Sr. #	Item	Marks	Station
1	Procedure writing of practical	10 Marks	Not applicable
2	Practical Copy	5 Marks	Station # Zero
3	Sketch Book	5 Marks	
4	15 OSPE Stations	2 Marks Each (2x15=30)	15 Stations
Grand Total of OSPE		Total Marks = 50	Total Station=15

SYLLABUS FOR WRITTEN ASSESSMENT & VIVA VOCE FOR SENDUP / FIRST PROFESSIONAL OF FIRST YEAR MBBS BATCH -49

Module Name	Content
Block I	
Foundation Module	Functional Organization of the Human Body and Control of the “Internal Environment
	The Cell and Its Functions
	Genetic Control of Protein Synthesis, Cell Function, and Cell Reproduction
	Transport of Substances Through the Cell Membrane
Musculoskeletal-I Module	Nerve physiology, membrane potential & action potential,
	Neuromuscular junction
Block II	
Musculoskeletal-II Module	Contraction of Skeletal Muscle, Excitation of Skeletal Muscle
	Contraction and Excitation of Smooth Muscle
	Cardiac muscle, action potential and excitation contraction coupling in cardiac muscle, (chapter 9 Guyton & Hall 14 th edition, excluding cardiac cycle)Specialized excitatory and conductive system of the heart
	Comparison between Skeletal, Smooth &Cardiac Muscles
Blood & Immunity Module	Red Blood Cells, Anemia, and Polycythemia
	Resistance of the Body to Infection: I. Leukocytes, Granulocytes, the Monocyte-Macrophage System, and Inflammation
	Resistance of the Body to Infection: II. Immunity and Allergy
	Blood Types; Transfusion; Tissue and Organ Transplantation, Hemostasis and Blood Coagulation
	Skin & Temperature regulation
Block III	
CVS Module	The Heart as a Pump and Function of the Heart Valves& regulation of heart pumping, cardiac cycle
	Electrocardiogram, its interpretation & its abnormalities
	Medical Physics of Pressure, Flow, and Resistance, Vascular Distensibility and Functions of the Arterial and Venous Systems
	Microcirculation and the Lymphatic System, Local and Humoral Control of Blood Flow by the Tissues
	Nervous Regulation of the Circulation, and Rapid &Long-Term Control of Arterial Pressure, hypertension
	Cardiac Output, Venous Return, and Their Regulation
	Muscle Blood Flow and Cardiac Output During Exercise; the Coronary& regional circulation
	Cardiac Failure, Circulatory Shock
Heart Valves and Heart Sounds; Dynamics of Valvular and Congenital Heart Defects	
Respiration Module	Pulmonary Ventilation, Pulmonary Volumes and Capacities, Alveolar Ventilation, Functions of the Respiratory Passageways
	Pulmonary Circulation, Pulmonary Edema, Physical Principles of Gas Exchange; Diffusion of Oxygen and Carbon Dioxide Through the Respiratory Membrane
	Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids
	Regulation of Respiration
	Useful Methods for Studying Respiratory Abnormalities, Respiratory Insufficiency, Hypoxia & Oxygen Therapy, Hypercapnia & Artificial Respiration
	Respiratory changes during Exercise, Aviation, Space & Deep-Sea Diving Physiology

SYLLABUS FOR OSPE FOR SENDUP / FIRST PROFESSIONAL OF FIRST YEAR MBBS BATCH -49

Block	OSPE Station No	Topic	Knowledge (C1, C2, C3)	Skill (P3)	Attitude (A3)	Sub division of OSPE Stations.	Marks
Block – I (Foundation & MSK-I)	Zero	Practical note book / sketch copy	30%	50%	20%	Practical copy	5
						sketch book	5
	1	Introduction to compound microscope				1 A	1
		Apparatus identification (Introduction to Neubauer's chamber, Red Blood Cell (RBC) pipettes & White Blood Cell (WBC) pipette)				1 B	1
	2	Introduction to Wintrobe & Westergren tube				2 A	1
		Determination of Hematocrit (HCT)				2 B	1
	3	Apparatus identification (Introduction to centrifuge machine)				3 A	1
						3 B	1
	4	Determination of Hemoglobin concentration				4 A	1
						4 B	1
5	Determination of Erythrocyte Sedimentation Rate (ESR)	5 A	1				
		5 B	1				
Total						10+10=20	
Block – II (MSK-II & Blood Module)	6	Determination of Total leukocyte Count (TLC)	30%	50%	20%	6 A	1
		Estimation of Red Blood Cell (RBC) count				6 B	0.5
		Determination of platelet count				6 C	0.5
	7	Determination of Differentiate leukocyte Count (DLC)				7 A	1
						7 B	1
	8	Determination of ABO blood groups				8 A	1
						Determination of Rh blood groups	8 B	1
	9	Determination of Clotting Time (CT)				9 A	1
						Determination of Bleeding Time (BT)	9 B
	10	Recording of body temperature				10 A	1
Demonstration of Triple response			10 B	1			
Total						10	

Block – III (CVS & Respiration Module)	11	Determination of arterial pulse	30%	50%	20%	11 A	1
		Determination of Jugular Venous Pulse (JVP)				11 B	1
	12	Clinical examination of chest for CVS				12 A	1
		Clinical examination of chest for respiration				12 B	0.5
		Cardio Pulmonary Resuscitation (CPR)				12 C	0.5
	13	Determination of Blood Pressure (BP)				13 A	1
		Effect of exercise and posture on arterial blood pressure				13 B	1
	14	Recording of electrocardiography (ECG)				14 A	1
						14 B	1
	15	Measurement of different lung volume and capacities with help of spirometer				15 A	1
		Recording of normal and modified movement of respiration (Stethography)				15 B	1
	Total						10

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Date: 12th November 2022

SECOND YEAR MBBS

CLINICALLY ORIENTED & INTEGRATED MODULAR CURRICULUM SEND UP / SECOND PROFESSIONAL

TABLE OF SPECIFICATION OF ASSESSMENT OF THEORY / OSPE & VIVA VOCE FOR THE SUBJECT OF PHYSIOLOGY BATCH 48 SECOND YEAR MBBS

Total Marks of Send Up / Second Professional = 231 Marks (70% of the Total Marks, 30% is CIA)

ASSESSMENT OF THEORY COMPONENT										
Block	Sr. #	Name of Module	MCQs (Total Marks 41)		Domain of cognition		SEQs (10x8=80Marks) (8 Marks each)	Domain of cognition	Total Marks (MCQs+SEQs+ viva)	
Block – 1	Module -1	GIT	5	12	C1	2	1	C1 = 30% C2 = 50% C3 = 20% Total = 100%	Total: 36 marks Percentage: 29%	
					C2	2				
					C3	1				
	Module -2	Renal	7		C1	2				2
					C2	3				
					C3	2				
Block – 2	Module -3	Reproduction	6	16	C1	2	1	C1 = 30% C2 = 50% C3 = 20% Total = 100%	Total: 40 marks Percentage: 33%	
					C2	2				
					C3	2				
	Module -4	CNS	10		C1	3				2
					C2	4				
					C3	3				
Block – 3	Module -5	Special Senses	5	13	C1	2	2	C1 = 30% C2 = 50% C3 = 20% Total = 100%	Total: 45 marks Percentage: 37%	
					C2	2				
					C3	1				
	Module -6	Endocrinology	8		C1	2				2
					C2	4				
					C3	2				
Grand Total Marks of Theory Assessment					MCQs = 41 + SEQs = 80=121 Marks					

TABLE OF SPECIFICATION VIVA VOCE COMPONENT

Viva Voce by internal Examiner = 30 Marks	Total Marks of Viva voce = 60 Marks
Viva Voce by External Examiner = 30 Marks	
VIVA FOR INTERNAL & EXTERNAL EACH	
Internal	External
Block- I = 9 (29%)	Block- I = 9 (29%)
Block- II = 10 (33%)	Block- II = 10 (33%)
Block- III= 11 (37%)	Block- III= 11 (37%)

TABLE OF SPECIFICATION OSPE / SKILL LAB COMPONENT

Sr. #	Item	Marks	Station
1	Procedure writing of practical	10 Marks	Not applicable
2	Practical Copy	5 Marks	Station # Zero
3	Sketch Book	5 Marks	
4	15 OSPE Stations	2 Marks Each (2x15=30)	15 Stations
Grand Total of OSPE		Total Marks = 50	Total Station=15

SYLLABUS FOR WRITTEN ASSESSMENT & VIVA VOCE FOR SENDUP / SECOND PROFESSIONAL OF SECOND YEAR MBBS BATCH -48

Module Name	Content
GIT module	General Principles of Gastrointestinal Function—Motility, Nervous Control, and Blood Circulation
	Propulsion and Mixing of Food in the Alimentary Tract
	Secretory Functions of the Alimentary Tract, Digestion and Absorption in the Gastrointestinal Tract
	Physiology of Gastrointestinal Disorders
Renal Module	The Body Fluid Compartments: Extracellular and Intracellular Fluids; Edema
	Urine Formation by the Kidneys: Glomerular Filtration, Renal Blood Flow, and Their Control, Tubular Reabsorption and Secretion
	Urine Concentration and Dilution; Regulation of Extracellular Fluid, Osmolarity and Sodium Concentration
	Renal Regulation of Potassium, Calcium, Phosphate, and Magnesium; Integration of Renal Mechanisms for Control of Blood, Volume and Extracellular Fluid Volume, Acid-Base Regulation
	Diuretics, Kidney Diseases
Block II	
Reproduction Module	Reproductive and Hormonal Functions of the Male
	Female Physiology Before Pregnancy and Female Hormones
	Pregnancy and Lactation
	Fetal and Neonatal Physiology
CNS Module	Organization of the Nervous System, Basic Functions of Synapses, and Neurotransmitters
	Sensory Receptors, Neuronal Circuits for Processing Information
	Somatic Sensations: I. General Organization, the Tactile and Position Senses, Sensory pathways
	Somatic Sensations: II. Pain, Headache, and Thermal Sensations, and their pathways
	Motor Functions of the Spinal Cord; the Cord Reflexes
	Cortical and Brain Stem Control of Motor Function and vestibular sensation & maintenance of equilibrium
	Contributions of the Cerebellum and Basal Ganglia to Overall Motor Control
	Cerebral Cortex, Intellectual Functions of the Brain, Learning, and Memory
	Behavioral and Motivational Mechanisms of the Brain—The Limbic System and the Hypothalamus
	States of Brain Activity—Sleep, Brain Waves, Epilepsy, Psychoses
	The Autonomic Nervous System and the Adrenal Medulla
Cerebral Blood Flow, Cerebrospinal Fluid, and Brain Metabolism	
Block III	
Special Senses Module	The Eye: I. Optics of Vision
	The Eye: II. Receptor and Neural Function
	The Eye: III. Central Neurophysiology of Vision

	The Sense of Hearing
	The Chemical Senses - Taste and Smell
Endocrinology Module	Introduction to Endocrinology
	Pituitary Hormones and Their Control by the Hypothalamus
	Thyroid Metabolic Hormones
	Adrenocortical Hormones
	Insulin, Glucagon, and Diabetes Mellitus
	Parathyroid Hormone, Calcitonin, Calcium and Phosphate Metabolism, Vitamin D, Bone, and Teeth

SYLLABUS FOR OSPE FOR SENDUP / SECOND PROFESSIONAL OF SECOND YEAR MBBS BATCH -48

Block	OSPE Station No	Topics	Knowledge (C1, C2, C3)	Skill (P3)	Attitude (A3)	Sub division of OSPE Stations.	Marks
Block – I (GIT & Renal)	Zero	Practical note book / sketch copy	30%	50%	20%	Practical copy	5
						sketch book	5
	1	Examination of sense of taste				1 A	1
						1 B	1
	2	Examination of sense of smell				2 A	1
						2 B	1
	3	Examination of superficial reflexes				3 A	1
						3 B	1
	4	Examination of deep reflexes				4 A	1
						4 B	1
5	Estimation of specific gravity of urine	5 A	1				
		5 B	1				
Total							10+10= 20
Block – II (Reproduction & CNS Module)	6	Examination of sensory system	30%	50%	20%	6 A	1
						6 B	1
	7	Examination of motor system				7 A	1
						7 B	1
	8	Examination of cerebellar functions				8 A	1
						8 B	1
	9	Examination of cranial nerves				9 A	1
						9 B	1
10	Performance of pregnancy test	10 A	1				
		10 B	1				

						Total	10
Block – III (Special Senses & Endocrinology)	11	Performance of hearing test / vestibular functions (VIII nerve)	30%	50%	20%	11 A	1
						11 B	1
	12	Determination of field of vision				12 A	1
						12 B	1
	13	Estimation of visual acuity				13 A	1
						13 B	1
	14	Examination pupillary reactions / Eye movements (III, IV, VI nerves)				14 A	1
						14 B	1
	15	Checking for color vision				15 A	1
		Ophthalmoscopy				15 B	1
						Total	10

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Date: 12th November 2022

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End