CURRICULUM

Rawalpindi Medical University

University Residency Program 2019

MS (ORTHOPAEDIC SURGERY)

CURRICULUM & REGULATIONSFOR 5 YEARS DEGREE PROGRAMME INORTHOPAEDICS (MS ORTHOPAEDICS)

RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI

Prof. Dr. Riaz Ahmed
Dean Orthopaedics, Neurosurgery &Trauma

MASTERS IN ORTHOPAEDICS (MS)

MS Orthopaedics will be a 5-year program. Those candidates who will complete their training and other requirements will be awarded an MS (Orthopaedics) degree by the Rawalpindi Medical University.

RECOGNIZED TRAINING CENTERS AND SUPERVISORS

Three hospitals attached with Rawalpindi Medical University (RMU) and Allied Teaching Hospitals will start with MS program, i.e.

- Department of Orthopaedic Surgery (Benazir Bhutto Hospital, Rawalpindi)
- Department of Orthopaedic Surgery (Holy Family Hospital, Rawalpindi)
- Department of Orthopaedic Surgery (District Head *Q*uarter Hospital, Rawalpindi)

Teaching faculty with more than ten years teaching experience in a PMDC recognized teaching hospital will be eligible to act as supervisors for MS program.

DURATION OF PROGRAM.

The duration of MS Orthopaedics course shall be five (5) years (first two years in Part I, and next three years in Part II) with structured training in a recognized department under the guidance of an approved supervisor.
The course is structured in two parts:

Part Iis structured for the 1st and 2nd calendar years. The candidate shall undertake clinical training in fundamental concepts of Surgery. At the end of 2nd year the examination shall be held in fundamental concepts of Surgery.
The clinical training in Orthopaedics shall start from 3rd year onwards in the recognized institutions.

Part II is structured for 3rd, 4th and 5th calendar years in MS Orthopaedics. It has two components; Clinical and Research. The candidate shall undergo clinical training to achieve educational objectives of MS Orthopaedics (knowledge & skills) along with rotation in relevant fields.

REGISTRATION AND ENROLLMENT

Total number of students enrolled for the course must not exceed 2 persupervisor/year.

- The maximum number of trainees that can be attached with a supervisor ata given point of time (inclusive of trainees in all years/phases of MStraining), must not exceed 6.
- Beds to trainee ratio at the approved teaching site shall be at least 5 bedsper trainee.
- The University will approve supervisors for MS courses.
- Candidates selected for the courses after their enrollment at the relevantinstitutions shall be registered with Rawalpindi Medical University (RMU) as per prescribed RegistrationRegulation.

AIM OF MS(ORTHOPAEDICS) PROGRAM

- This course is designed to produce specialist in Orthopaedic and trauma surgery, who will have adequate knowledge and skills in Orthopaedic& Trauma surgery and can recognize and deal safely with a wide range of Orthopaedic and Trauma problems as consultants.

ADMISSION CRITERIA

Admission Criteria

For admission in MS Orthopaedics course, the candidate shall have:

- MBBS degree
- Completed one year House Job
- Registration with PMDC
- Passed Entry Test conducted by the University & aptitude interviewby the Institute concerned
- Having up to the mark credentials as per RMU rules (no. ofattempts in each professional, any gold medals or distinctions,relevant work experience, Rural/ Army services, researchexperience in a recognized institution, any research article published in a National or International Journal) may also beconsidered on case to case basis.

Exemptions: A candidate holding FCPS/MRCS/Diplomate/equivalentqualification in Orthopaedic Surgery shall be exempted from Part-I Examination and shall be directly admitted to Part-II Examinations,subject to fulfillment of requirements for the examination.

PART:1 ENTRY TEST

A. WRITTEN PAPER

The written examination will consist of 100 Multiple Choice Questions with single best answer. Division of MCQs will be as follows:

i. Basic Sciences (50 MCQs)
ii. Anatomy (15 MCQs)
iii. Orthopaedic Surgery (35 MCQs)

The applicant scoring a minimum of 60% marks will be considered pass.

B. OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE)

The Objective Structured Clinical Examination will consist of 25 stations.

Each station will consist of data and images based on the subject of General &Orthopaedic Surgery.

Each correct answer will carry 2 marks

The applicant scoring 60 % of marks will be considered pass.

GOALS OF THE COURSE

The goal of MS course in Orthopaedics is to produce a competent Orthopaedic surgeon who is:

- Aware of the current concepts in quality care in Orthopaedics and musculoskeletal trauma and also of diagnosis, therapeutic, medical and surgical management of Orthopaedic problems
- Able to offer initial primary management of acute Orthopaedic and trauma emergencies
- Aware of the limitations and refer readily to major centres for more qualified care of cases which warrant such referral
- Aware of research methodology and be able to conduct research and publish the work done
- Able to effectively communicate with patients, their family members, people and professional colleagues
- Able to exercise empathy and a caring attitude and maintain high ethical standards
- Able to continue taking keen interest in continuing education irrespective of whether he / she is in teaching institution or in clinical practice
- Dynamic, available at all times and proactive in the management of trauma victims and Orthopaedic emergencies

OBJECTIVES OF THE COURSE

At the end of MS course, the resident should be adept in the following domains:

- Skill to take a proper history for musculoskeletal disorders
- Clinical examination of all musculoskeletal disorders
- Application of history & clinical findings in making an appropriate clinical diagnosis
- Interpretation of investigations
- Discussion of options of treatment and follow up rehabilitation for the diagnosis made
- Have an in-depth theoretical knowledge of the syllabus with emphasis on current concepts
- Learn basic skills in musculoskeletal surgery including training on bone models and on patients by assisting or performing under supervision or perform independently as required.
- Have basic knowledge of common disorders of the spine, degenerative disorders of spine, trauma spine and infections of spine for diagnosis and evaluation of the common spine disorders
- Develop a familiarity to major topics under “Sports Medicine” - to gain exposure to the basic surgery, master the patho-physiology of the conditions usually encountered and develop a sound foundation to add new knowledge in the future
- Learn basic principles of Hand Surgery with emphasis on applied anatomy, understanding patho-physiology of common conditions, planning of treatment and post-operative protocols
- Develop understanding of principles of soft tissue coverage and learn basic techniques used in extremity surgery.

SYLLABUS OF THE COURSE

1. Theory

- **General Orthopaedics**
  - **Infections**
    - General Principles of Infection
    - Osteomyelitis
    - Infectious Arthritis
    - Tuberculosis and Other Infections
  - **Tumors**
    - General Principles of Tumors
    - Benign Tumors of Bone
    - Malignant Tumors of Bone
    - Soft Tissue Tumors and Non-neoplastic Conditions Simulating Bone Tumors
  - **Congenital Anomalies**
    - Congenital Anomalies of Lower Extremity
    - Congenital and Developmental Anomalies Of Hip and Pelvis
    - Congenital Anomalies of Trunk and Upper Extremity
  - **Peripheral Nerve Injuries**
    - Diagnosis and management
  - **Microsurgery**
    - Basic principles and techniques
  - **Imaging in Orthopaedics**

- **Other Non-traumatic Disorders**
  - Osteochondrosis
  - Rickets and osteomalacia
  - Metabolic bone disease
  - Cerebral Palsy
  - Paralytic Disorders
  - Neuromuscular Disorders
  - Genetic disorders
  - Osteonecrosis

- **Traumatology**
  - **Fractures and Dislocations**
    - General Principles of Fracture Treatment
    - Fractures of Lower Extremity
    - Fractures of Hip
    - Fractures of Acetabulum And Pelvis
    - Fractures of Shoulder, Arm, and Forearm
    - Malunited Fractures
    - Delayed Union and Nonunion Of Fractures
    - Acute Dislocations
    - Old Unreduced Dislocations
    - Fractures, Dislocations and Ligamentous Injuries of the hand
    - Fractures and Dislocations of Foot
    - Fractures and Dislocations In Children

- **Regional Orthopaedics**
  - **Spine**
    - Spinal Anatomy And Surgical Approaches
    - Fractures, Dislocations, And Fracture-Dislocations Of Spine
    - Arthrodesis Of Spine
    - Pediatric Cervical Spine
    - Scoliosis And Kyphosis
    - Lower Back Pain And Disorders Of Intervertebral Discs
    - Infections Of Spine

- **Sports Medicine**
  - Ankle Injuries
  - Knee Injuries
  - Shoulder And Elbow Injuries
  - Recurrent Dislocations

- **The Hand**
  - Basic Surgical Technique and Aftercare
  - Acute Hand Injuries
  - Flexor and Extensor Tendon Injuries
  - Wrist Disorders
  - Paralytic Hand
  - Cerebral Palsy of the Hand
  - Arthritic Hand
  - Compartment Syndromes and Volkmann Contracture
  - Dupuytren Contracture
  - Carpal Tunnel, Ulnar Tunnel, and Stenosing Tenosynovitis
  - Tumors and Tumorous Conditions of Hand
  - Hand Infections
  - Congenital Anomalies of Hand
- **The Foot and Ankle**
  - Surgical Techniques
  - Disorders of Hallux
  - PesPlanus
  - Lesser Toe Abnormalities
  - Rheumatoid Foot
  - Diabetic Foot
  - Neurogenic Disorders
  - Disorders of Nails and Skin Disorders of Tendons and Fascia

- **Operative Orthopaedics**
- **Surgical Techniques and Approaches**
  - **Arthrodesis**
    - Arthrodesis of Ankle, Knee and Hip
    - Arthrodesis of Shoulder, Elbow and Wrist
  - **Arthroplasty**
    - Arthroplasty of Ankle and Knee
    - Arthroplasty of Hip
    - Arthroplasty of Shoulder and Elbow
  - **Amputations**
    - General Principles of Amputations
    - Amputations about Foot
    - Amputations of Lower Extremity
    - Amputations of Hip And Pelvis
    - Amputations of Upper Extremity
    - Amputations of Hand
  - **Arthroscopy**
    - General Principles Of Arthroscopy
    - Arthroscopy Of Lower Extremity
    - Arthroscopy Of Upper Extremity

2. Practical

- Closed Reduction of Fractures, Dislocations
- Mastering Plastering Techniques
- Debridement of Open Fractures
- External Fixator application
- Internal Fixation of minor fractures with K-wires
- Closed manipulative correction of congenital problems like CTEV & other skeletal deformities Biopsies – FNAB, FNAC, Trocar needle, open
- Excision of benign lesions
- Tendon lengthening
- Incision and drainage, acute Osteomyelitis / Septic Arthritis
- Skull tongs application
- Tension band wiring
- Interfragmentary compression
- Plate Osteosynthesis of Forearm bones
- Carpal Tunnel Release
- Bone grafting
- Soft tissue releases
- Interlocking IM Nailing of Tibia & Femur
- Humerus Plating
- Ankle Fracture Fixations
- DHS Fixation
- Hemi-arthroplasty Hip
- Caudal epidural injections
- Facet Block
- Vertebroplasty
- Exposure of posterior spine
- Laminectomy
- Anterior and posterior instrumentation of spine
- Bone Skills Lab

- Tension Band Wiring
- Lag Screw Interfragmentary Compression
- Broad Plating
- Narrow Plating
- External Fixation
- Cancellous Screw Fixation
- Dynamic Hip Screw Fixation
- Dynamic Condylar Screw Fixation
- Tibia Intramedullary Interlocking Nailing
- Femur Intramedullary Interlocking Nailing
- Tibial Condyle Fixation
- Elbow fractures Fixation
- Ankle Fractures Fixation
- Pelvis – External Fixation
- Pubic Symphysis – ORIF
- Acetabulum Fracture Fixation
- MIPPO Tibia
- Hemiarthroplasty
- Spine - Posterior Instrumentation
- Spine – Anterior Instrumentation
- To clinically diagnose, assess, investigate and initially manage all surgical and medical emergencies To learn to assess ABC and perform CPR

- To perform

    - Endotracheal intubation
    - Peripheral and Central intravenous cannulation
    - Intercostal drainage tube insertion
    - Peritoneal aspiration
    - Splintage of the spine and limbs for fracture-dislocations

- To learn the use of certain emergency drugs – adrenaline, atropine, dopamine, Steroids, analgesics etc.
- To learn to apply
  - Glasgow Coma Scale (GCS)
  - AO classification of fractures
  - Gustillo Anderson grading of open fractures
  - Mangled Extremity Severity Scoring

- To learn to communicate with patient's attendants on death of patient
- To learn to handle confidentiality issues

TEACHING PROGRAM

1. General Principles

- Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training is skills oriented.

- Learning in postgraduate program is essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

2. Teaching Sessions

- Bedside teaching rounds
- Journal club
- Seminar
- PG case discussion
- X – Ray discussion
- Ortho-radiology meeting
- Central session (held in hospital auditorium regarding various topics like CPC, guest lectures, student seminars, grand round, sessions on basic sciences, biostatistics, research methodology, teaching methodology, health economics, medical ethics and legal issues).

3. Teaching Schedule

In addition to bedside teaching rounds, in the department there will be daily hourly sessions of formal teaching per week. The suggested time distribution of each session for department's teaching schedule as follows:

- Journal club Once a week
- Seminar Twice a week
- PG case discussion Twice a week
- Ortho-radiology meeting Once a month
- Central session As per hospital schedule
- Workshop – once every 3 months

Note:

- All sessions are supervised by faculty members. It is mandatory for all residents to attend the sessions except those posted in emergency.
- All the teaching sessions are assessed by the faculty members at the end of session and marks are given out of 10 and kept in the office for internal assessment.
- Attendance of the residents at various sessions has to be at compulsory.

MODULAR SYSTEM

The 5-year MS (Orthoapedics) training will be divided into modules of 03 month duration. First 02 years in General surgery (including minor rotations) and next 03 years in Orthopaedic Surgery.

Module No.	Training Year	Module Name	Duration	Credit Hours
I	1st	Principles of General Surgery	03 months	05
II	1st	Skin, soft-tissue and breast	03 months	05
III	1st	Upper GastroIntestinal Surgery	03 months	05
IV	1st	Lower GastoIntestinal Surgery	03 months	05
V	2nd	Endocrine, Head and Neck	03 months	05
VI	2nd	Orthopaedics (Minor rotation)	03 months	2.5
VII & VIII	2nd	Urology (Minor rotation)	02 months	2.5+2.5+2.5
		Plastic / Paediatric Surgery (Minor rotation)	02 months	
		Neurosurgery / Thoracic Surgery (Minor rotation)	02 months	
IX	3rd	General Orthopaedics	03 months	05
X	3rd	Infections & Tumors	03 months	05
XI	3rd	Congenital Anomalies	03 months	05
XII	3rd	Traumatology – Fractures & Dislocations	03 months	05
XIII	4th	Sports Medicine	03 months	05
XIV	4th	Spine	03 months	05
XV	4th	The Hand	03 months	05
XVI	4th	Foot & Ankle	03 months	05
XVII	5th	Arthroplasty	03 months	05
XVIII	5th	Arthroscopy	03 months	05
XIX	5th	Plastic surgery / Anaesthesia / Paediatric Surgery (Minor rotation)	03 months	2.5
XX	5th	Rehabilitation (Minor rotation)	03 months	2.5

TOTAL CREDIT HOURS OF THE MODULE = **90 HOURS**

RESEARCH / THESIS CREDIT HOURS = **10 HOURS**

ALL MODULES ARE COMPULSORY.

- Credit hours will be awarded to the candidates after they have attended and cleared the Internal assessment of each module

- MS (Orthopaedics) will comprise of 02 exams; one at the end of 2nd year of training and other on completion of 5th year of training.

EXAMINATIONS

PART-I EXAMINATION

- All candidates admitted in MS Orthopaedics course shall appear in Part-I examination at the end of second calendar year.
- The examination shall be held on biannual basis.
- The examination shall have the following components:
    a. Written 200 Marks
    b. OSCE 50 Marks
    c. Clinical examination 100 Marks
    d. Log Book Evaluation 80 Marks (40 marks per year)
- There shall be two written papers of 100 marks each:
    a. Papers 1 & 2: Principles of Surgery
- The types of questions shall be of Short/Modified essay type and MCQs (single best).

  Oral & practical/clinical examination shall be held in clinical techniques InSurgery .

- To be declared successful in Part-I examination the candidate mustsecure 60% marks in each component and 50% in each subcomponent.
- Only those candidates, who pass in theory papers, will be eligible toappear in the Oral & Practical/clinical Examination.

- The candidates, who have passed written examination but failed in oral& practical/ clinical examination, will re-appear only in oral &practical/clinical examination.
- The maximum number of attempts to re-appear in oral & practical/clinical Examination alone shall be three, after which the candidateshall have to appear in both written and oral & practical/clinicalexaminations as a whole.
- To be eligible to appear in Part-I examination the candidate must submit;duly filled, prescribed Admission Form to the Controller ofExaminations duly recommended by the Principal/Head of theInstitution in which he/she is enrolled;a certificate by the Principal/Head of the Institution, that thecandidate has attended at least 75% of the lectures, seminars,practical/clinical demonstrations;Examination fee as prescribed by the University.

PART-II EXAMINATION

- All candidates admitted in MS Orthopaedics course shall appear in Part-II(clinical) examination at the end of structured training programme (end of5th calendar year), and having passed the part I examination.
- However, a candidate holding FCPS / MRCS / Diplomate / equivalentqualification in Orthopaedic Surgery shall be exempted from Part-I Examination and shall be directly admitted to Part-II Examination,subject to fulfillment of requirements for the examination.
- The examination shall be held on biannual basis.
    a. To be eligible to appear in Part-III examination the candidate must submit;
    b. duly filled, prescribed Admission Form to the Controller ofExaminations duly recommended by the Principal/Head ofthe Institution in which he/she is enrolled;
    c. a certificate by the Principal/Head of the Institution, that thecandidate has attended at least 75% of the lectures,seminars, practical/clinical demonstrations;
    d. Original Log Book complete in all respect and duly signed bythe Supervisor (for Oral & practical/clinical Examination);certificate of having passed the Part-I examination;
    e. Examination fee as prescribed by the University.

THE PART-II CLINICAL EXAMINATION SHALL HAVE THE FOLLOWING COMPONENTS:

- Written 300 marks
- Oral & practical/clinical examination 300 marks
- Log Book Evaluation 120 marks (40 marks per year)

- There shall be two written papers of 150 marks each.Both papers shall have problem-based Short/Modified essay questionsand MCQs.Oral & practical/clinical examination shall have 300 marks for:
  - Long Case 100
  - Short Cases 100(25 marks each)
  - OSCE 100
- To be declared successful in Part-II examination the candidate mustsecure 60% marks in each component and 50% in each sub-component.Only those candidates, who pass in theory papers, will be eligible toappear in the Oral & Practical/ Clinical Examination.
- The candidates, who have passed written examination but failed inOral & Practical/ Clinical Examination, will re-appear only in Oral &Practical / Clinical examination.
- The maximum number of attempts to re-appear in oral & practical/clinical Examination alone shall be three, after which the candidateshall have to appear in both written and oral & practical/clinicalexaminations as a whole.
- The candidate with 80% or above marks shall be deemed to havepassed with distinction.
- Log Book/Assignments: Through out the length of the course, theperformance of the candidate shall be recorded on the Log Book.
- The Supervisor shall certify every year that the Log Book is beingmaintained and signed regularly.
- The Log Book will be developed & approved by the Research Board.
- The evaluation will be maintained by the Supervisor (in consultationwith the Co-Supervisor, if appointed).

- The performance of the candidate shall be evaluated on annual basis,e.g., 40 marks for each year in five years MS Orthopaedics course. Thetotal marks for Log Book shall be 200.The log book shall reflect theperformance of the candidate on following parameters:
    - Year wise record of the competence of skills.
    - Year wise record of the assignments.
    - Year wise record of the evaluation regarding attitude &behaviour
    - Year wise record of journal club / lectures / presentations /clinico-pathologic conferences attended & / or made by thecandidate.

SUBMISSION / EVALUATION OF SYNOPSIS

1. The candidates shall prepare their synopsis as per guidelines provided by the Rawalpindi Medical University.
2. The research topic in clinical subject should have 30% component related to basic sciences and 70% component related to applied clinical sciences. The research topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, to collect & analyze the data.
3. Synopsis of research project shall be submitted by the end of the 3rd year of MS program. The synopsis after review by an Institutional Review Committee shall be submitted to the University for Consideration by the Research Board, through the Principal / Dean /Head of the institution.
4. **Or else**, if the candidate opts for 02 research publications in PMDC and HEC recognized journals, then he will have to submit 02 research topics along with their synopsis to the University Research Board for approval. He will undertake the study after approval from the board.

SUBMISSION OF THESIS

THESIS SHALL BE SUBMITTED BY THE CANDIDATE DULY RECOMMENDED BY THE SUPERVISOR.

THE MINIMUM DURATION BETWEEN APPROVAL OF SYNOPSIS AND SUBMISSION OF THESIS SHALL BE ONE YEAR, BUT THE THESIS CANNOT BE SUBMITTED LATER THAN 8 YEARS OF ENROLMENT.

THE RESEARCH THESIS MUST BE COMPILED AND BOUND IN ACCORDANCE WITH THE THESIS FORMAT GUIDELINES APPROVED BY THE UNIVERSITY AND AVAILABLE ON WEBSITE.

THE RESEARCH THESIS WILL BE SUBMITTED ALONG WITH THE FEE PRESCRIBED BY THE UNIVERSITY.

OR ELSE, THE CANDIDATE CAN SUBMIT COPIES OF 02 RESEARCH ARTICLES PUBLISHED IN PMDC AND HEC RECOGNIZED JOURNALS WHICH HAD PREVIOUSLY BEEN ACCEPTED IN THE UNIVERSITY RESEARCH BOARD, AT LEAST 06 MONTHS PRIOR TO THE EXAMINATION.

LOG BOOK

THE RESIDENTS MUST MAINTAIN A LOG BOOK AND GET IT SIGNED REGULARLY BY THESUPERVISOR. A COMPLETE AND DULY CERTIFIED LOG BOOK SHOULD BE PART OF THEREQUIREMENT TO SIT FOR MS EXAMINATION. LOG BOOK SHOULD INCLUDE ADEQUATENUMBER OF DIAGNOSTIC AND THERAPEUTIC PROCEDURES OBSERVED ANDPERFORMED, THE INDICATIONS FOR THE PROCEDURE, ANY COMPLICATIONS AND THEINTERPRETATION OF THE RESULTS, ROUTINE AND EMERGENCY MANAGEMENT OFPATIENTS, CASE PRESENTATIONS IN CPCS, JOURNAL CLUB MEETINGS AND LITERATUREREVIEW.

PROPOSED FORMAT OF LOG BOOK IS AS FOLLOWS:

CANDIDATE'S NAME: _____

ROLL NO. _____

THE ABOVE MENTIONED PROCEDURES SHALL BE ENTERED IN THE LOG BOOK AS PERFORMAT:

PROCEDURES PERFORMED

Sr.#	Date	Name of Patient, Age, Sex & Admission No	Diagnosis	Procedure Performed	Supervisor's Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					

20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					
41.					
42.					
43.					
44.					
45.					
46.					
47.					
48.					
49.					

EMERGENCIES HANDLED

Sr.#	Date	Name of Patient, Age, Sex & Admission No	Diagnosis	Procedure Performed	Supervisor's Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					
41.					
42.					
43.					
44.					
45.					
46.					
47.					
48.					
49.					
50.					

CASES PRESENTED

Sr.#	Date	Name of Patient, Age, Sex & Admission No	Case Presented	Supervisor's Signature
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				

27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				
37.				
38.				
39.				
40.				
41.				
42.				
43.				
44.				
45.				
46.				
47.				
48.				
49.				
50.				
51.				
52.				
53.				
54.				
55.				

SEMINAR/JOURNAL CLUB PRESENTATION

Sr.#	Date	Topic	Supervisor's Signature
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			

25.			
26.			
27.			
28.			
29.			
30.			
31.			
32.			
33.			
34.			
35.			
36.			
37.			
38.			
39.			
40.			
41.			
42.			
43.			
44.			
45.			
46.			
47.			
48.			
49.			
50.			

EVALUATION RECORD

(Excellent, Good, Adequate, Inadequate, Poor)

At the end of the rotation, each faculty member will provide an evaluationof the clinical performance of the fellow.

Sr.#	Date	**Method of Evaluation (Oral, Practical, Theory)**	Rating	Supervisor's Signature
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				

23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				
37.				
38.				
39.				
40.				
41.				
42.				
43.				
44.				
45.				
46.				
47.				
48.				
49.				
50.				
51.				
52.				

EVALUATION AND ASSESSMENT STRATEGIES

Assessment

It will consist of action and professional growth oriented **student-centeredintegrated assessment** with an additional component of**informal internal assessment, formative assessment** andmeasurement-based **summative assessment.**

Student-Centered Integrated Assessment It views students as decision-makers in need of information about theirown performance. Integrated Assessment is meant to give studentsresponsibility for deciding what to evaluate, as well as how to evaluate it,encourages students to **'own'** the evaluation and to use it as a basis forself-improvement. Therefore, it tends to be growth-oriented, student-controlled, collaborative, dynamic, contextualized, informal, flexible andaction-oriented.

In the proposed curriculum, it will be based on:

- Self -Assessment by the student
- Peer Assessment
- Informal Internal Assessment by the Faculty

SELF ASSESSMENT BY THE STUDENT

- Each student will be provided with a pre-designed self-assessment formto evaluate his/her level of comfort and competency in dealing withdifferent relevant clinical situations. It will be the responsibility of thestudent to correctly identify his/her areas of weakness and to takeappropriate measures to address those weaknesses.

PEER ASSESSMENT

- The students will also be expected to evaluate their peers after themonthly small group meeting. These should be followed by a constructivefeedback according to the prescribed guidelines and should be nonjudgmentalin nature. This will enable students to become good mentorsin future.

INFORMAL INTERNAL ASSESSMENT BY THE FACULTY

- There will be no formal allocation of marks for the component of InternalAssessment so that students are willing to confront their weaknessesrather than hiding them from their instructors.
- It will include:
  - Punctuality
  - Ward work
  - Monthly assessment (written tests to indicate particular areasof weaknesses)
  - Participation in interactive sessions

FORMATIVE ASSESSMENT

- Will help to improve the existing instructional methods and the curriculumin use

FEEDBACK TO THE FACULTY BY THE STUDENTS:

- After every three months students will be providing a written feedbackregarding their course components and teaching methods. This will helpto identify strengths and weaknesses of the relevant course, facultymembers and to ascertain areas for further improvement.

SUMMATIVE ASSESSMENT

- It will be carried out at the end of the programme to empirically evaluatecognitive, psychomotor and affective domains in order to award diplomasfor successful completion of courses.

MS ORTHOPAEDICS EXAMINATION - DETAIL

Part I- MS Orthopaedics Examination

Total Marks: 430

- All candidates admitted in MS Orthopaedics course shall appear in Part Iexamination at the end of second calendar year.
- There shall be two written papers of 100 marks each, Oral & practical/clinical examination of 150 marks and log book assessment of 80 marks.

Topics included in papers 1 & 2:

- Basic Principles of Surgery

Components of Part I Examination

Theory:

Paper 1: 100 Marks 3 Hours

- 10 SEQs (No Choice; 05 marks each) 50 Marks
- 50 MCQs 50 Marks

Paper 2: 100 Marks 3 Hours

- 10 SEQs (No Choice; 05 marks each) 50 Marks
- 50 MCQs 50 Marks

Only those candidates, who pass in theory papers, will be eligible to appearin the Oral & Practical/Clinical Examination.

Oral & Practical/ Clinical Examination shall be held in clinical techniquesrelevant to Surgery .

OSCE 50 Marks

- 10 stations each carrying 05 marks of 10 minutes duration; each
- evaluating performance based assessment with five of them interactive

Clinical 100 Marks

- Four short cases (each 15 marks) 60 Marks
- One long case: 40 Marks

Log Book 80 Marks

PART II MS ORTHOPAEDICS

Total Marks: 920

- All candidates admitted in MS Orthopaedics course shall appear in Part-II examination at the end of structured training programme (end of 5thcalendar year and after clearing Part I examination).
- There shall be two written papers of 150 marks each, Oral & Practical/Clinical examination of 300 marks, log book assessment of 120 marksand thesis examination of 200 marks.

PART II MS ORTHOPAEDICS

Clinical Examination

Total Marks: 720

Topics included in paper 1

Adult Orthopaedics

- Trauma (15 MCQs)
- Joints (10MCQs)
- Infections (10 MCQs)
- Neuromuscular Disorders & Spine (10MCQs)
- Hand, Foot and Ankle (10MCQs)
- Amputation, Prosthetics and Orthotics (10MCQs)
- Tumors (05MCQs)
- Sports Medicine & Pain (05MCQs)

Topics included in paper 2

PAEDIATRICORTHOPAEDICS

- Congenital Disorders (15MCQs)
- Trauma (10 MCQs)
- General Affections of Bones (10MCQs)
- Infections of Bones and Joints (10 MCQs)
- Affections of Joints & Muscles (10 MCQs)
- Neuromuscular Disorders & Spine (10MCQs)
- Affections of Nervous System (05MCQs)
- Tumors (05MCQs)

COMPONENTS OF PART II CLINICAL EXAMINATION

Theory

Paper I 150 Marks 3 Hours

- 15 SEQs (No Choice) 75 Marks
- 75 MCQs 75 Marks

Paper II 150 Marks 3 Hours

- 15 SEQs (No Choice) 75 Marks
- 75 MCQs 75 Marks
- Only those candidates, who pass in theory papers, will be eligible to appear
- in the Oral & Practical/ Clinical Examination.

OSCE 100 Marks

- 10 stations each carrying 10 marks of 10 minutes duration; each
- evaluating performance based assessment with five of them interactive

Clinical 200 Marks

- Four short cases (each 25 marks) 100 Marks
- One long case: 100 Marks

Log Book 120 Marks

Part II MS ORTHOPAEDICS

Thesis Examination

Total Marks: 200

- All candidates admitted in MS Orthopaedics course shall appear in Part-II Examination at the end of 5th year of the MS programme and not later than 8th calendar year of enrolment. The examination shall include thesis evaluation with defense.

RECOMMENDED BOOKS

CORE BOOKS

- Apley's System of Orthopaedics& Fractures
- Campbell's Operative Orthopaedics
- Mercer's Orthopaedic Surgery
- Mc Rae – Clinical Examination
- Hamilton Bailey Demonstration of Clinical Signs & Symptoms
- Snell's Anatomy
- Pye's Surgical Handicraft
- Stewart's Manual

REFERENCE BOOKS

- Rockwood & Green – Fractures in Adults
- Rockwood & Green – Fractures in Children
- Chapman Orthopaedic Surgery
- Turek's Textbook of Orthopaedics
- Hoppenfield – Surgical Exposures
- Mc Rae – Surgical Exposures
- Insall& Scott – Surgery of the Knee
- Miller & Cole Textbook of Arthroscopy
- Tachdjian Paediatric Orthopaedics