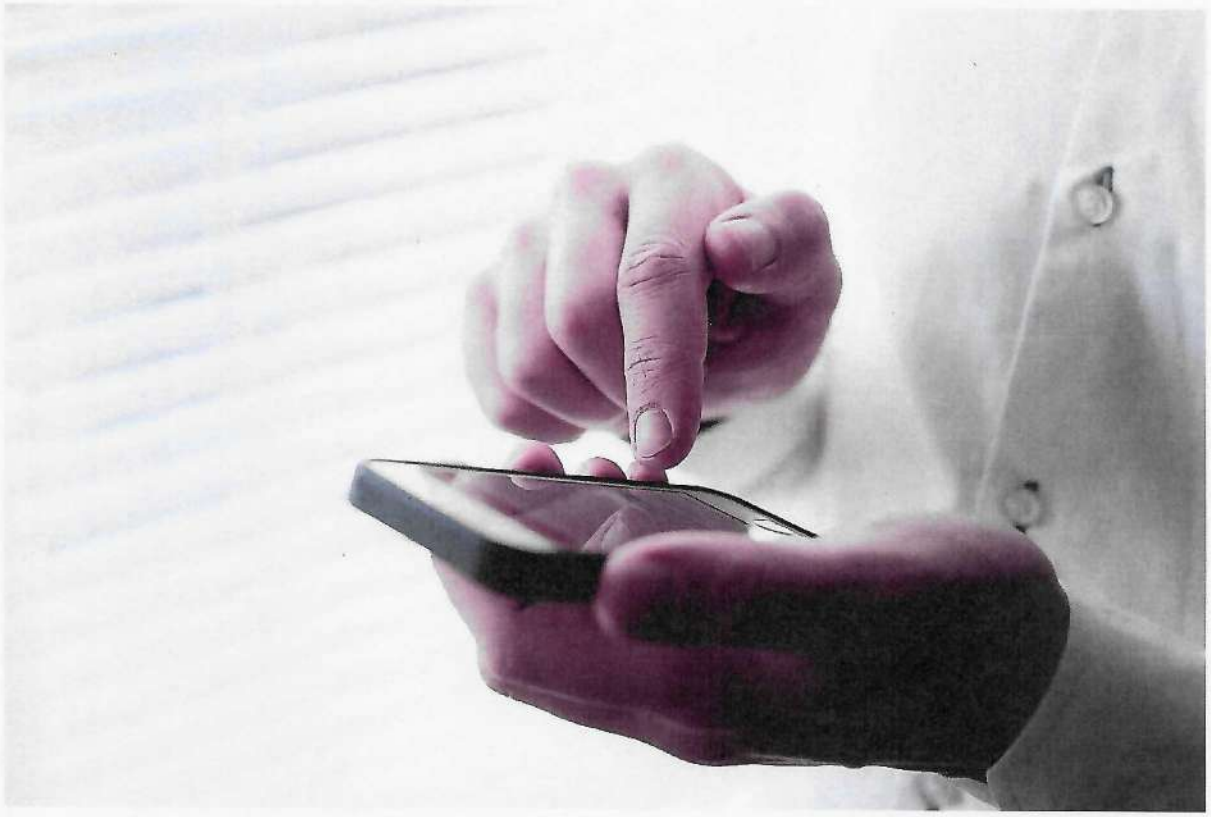
Syllabus for MS (Orthopaedics) Programme



Guru Gobind Singh Indraprastha University

A State University established by the Govt. of NCT of Delhi

University School of Medicine and Allied Health Sciences

ORTHOPAEDICS — M S

COURSE GOAL & OBJECTIVES

Major Goal:

Patient care Ability: A postgraduate in orthopaedics surgery at the end of its 3 year course should:

- develop proper clinical acumen to interpret diagnostic results and correlate them with symptoms from history taking
- become capable to diagnose the common clinical conditions/ disease in the specialty
- and to manage them effectively with success without making any serious complications and sincerely to
- take such accurate decision, for the patient's best interest including making a referral to consultation with a more experienced colleague/professional friend while dealing with any patient with a difficult condition.

Teaching ability:
He/she also should be able to teach an MBBS student about the commonly encountered conditions in orthopaedics pertaining to their diagnostic features, basic patholophysiological aspect and the general and basic management strategies.

Research Ability:

- He/she should also acquire elementary knowledge about research methodology,
- He should become well versed with record-keeping methods,
- The post graduate should be able to conduct a research inquiry including making a proper analysis and writing a report on its findings.

Team work:

- He/she should be capable to work as a team member.
- He/she should develop general humane approach to patient care with communicating ability with the patient's relatives especially in emergency situation such as in causality department while dealing victims of any type
- Accident/disaster.
- He/she should also maintain human values with ethical consideration.

OBJECTIVES OF THE POST-GRADUATE COURSE

A postgraduate at the end of a 3-year P.G. degree course should acquire the following:

1. ***Cognitive knowledge***

Able to : Describe embryology, applied anatomy, physiology, pathology, clinical features, diagnostic procedures and the therapeutics including preventive methods, (medical/surgical) pertaining to musculo-skeletal system.

2. ***Clinical decision making ability & management expertise:***

- Diagnose conditions from history taking, clinical evaluation and investigations
- and develop expertise to manage medically as well as surgically the commonly encountered, disorders and disease in different areas as follows:

(a) ***Pediatric orthopaedics***- The student should be exposed to all aspects of

- congenital anddevelopmental disorders such as CTEV (club-Foot), developmental dysplasia of hip, congential deficiency of limbs, Perthe's disease and infections,
- and also to acquire adequate knowledge about the principles of management of these disorders, their evolution and recent trends.

(b) ***Orthopaedic oncology***- The resident is expected to be familiar with the

- Tumours encountered in orthopaedic practice.
- The recent trends towards limb salvage procedures and the advances in chemotherapy need to be familiar to him.

(c) Management of Trauma-

- Trauma in this country is one of the main causes of morbidity and mortality in our demographic statistics. The student is expected to be fully conversant with trauma in its entirety.
- In any type of posting after qualification the orthopaedic surgeon would be exposed to all varieties of acute trauma. Hence, it is his responsibility to be able to recognize, assess and manage it including the medico legal aspects. This should be under able supervision of his seniors, mentor.
- He should also be well versed with evolution and recent trends in trauma management.

(d) ***Sports Medicine-***

- A lot of importance is being given to sports medicine especially in view of the susceptibility of the athlete to injury and his failure to tide over them.

- Sports medicine not only encompasses diagnostic and therapeutic aspects of athletic injuries but also their prevention, training schedules of personnel & their selection.

(d) Physical Medicine and Rehabilitation-

The student is expected to be familiar with this in all its aspects. Adequate exposure in the workshop manufacturing orthotics and prosthetics is mandatory, as is the assessment of the orthopedically handicapped.

(e) Orthopedic Neurology-

- The student should be exposed to all kinds of nerve injuries as regards their recognition & management.

- Cerebral palsy and acquired neurologic conditions such as postpolio residual paralysis also need to be emphasized in their entirety.

(f) Spine Surgery-

The student is expected to be familiar with various kinds of spinal disorders such as scoliosis, kypho-scoliosis, spinal trauma, PIVD, infections (tuberculosis and pyogenic),& tumours as regards their clinical presentations and management.

(g) Basic sciences in Orthopaedics-

This deals with some of the fundamentals in orthopaedics:

- The structure and function of bone cartilage etc, and their metabolic process. He should be well versed in recent trends of medical and surgical management (joint replacement) of various disorder affecting the cartilage/ joint.

- The student must also learns about implants in orthopaedics and their metallurgy.

(i) ***Radiology***

- Acquire knowledge about radiology/imaging and to interpret different radiological procedures and imaging in musculo-skeletal disorders.
- There should be collaboration with Radiology department for such activities.

(j) ***Psychologic and social aspect***

Some elementary knowledge in clinical Psychology and social, work management is to be acquired for management of patients, especially those terminally ill and disabled-persons and interacting with their relatives.

3. ***Teaching:***

Acquire ability to teach an MBBS student in simple and straightforward language about the common orthopaedic ailment/disorders especially about their signs/symptoms for diagnosis with their general principles of therapy.

4. ***Research:***

Develop ability to conduct a research enquiry on clinical materials available in Hospital and in the community.

5. ***Patient doctor relation:***

Develop ability to communicate with the patient and his/her relatives pertaining to the disease condition, its severity and options available for the treatment/therapy.

6. ***Preventive Aspect:***

Acquire knowledge about prevention of some conditions especially in children such as poliomyelitis, congenital deformities, cerebral palsy and common orthopaedic malignancies.

7. ***Identification of a special areas within the subject:***

- To further develop higher skills within the specialty in a specialized are such as Arthroplasty, Neurology, Arthroscopy oncology, spine surgery, hand surgery and Rheumatology,

- and identify some area of interest during the residency and do fellowship/senior residency programme in one of such areas.

8. ***Presentation of Seminar/paper:***

Should develop public speaking ability and should be able to make presentation on disease-conditions/research topics to fellow colleagues in a Seminar/meeting/conference using audiovisual aids.

9. ***Research writing:***

Should be capable to write case-reports and research papers for publication in scientific journals.

10. ***Team work:***

- Team spirit in patient management, working together in OPD, OT, ward and sharing responsibility with colleagues such as doctor, nurses and other staff are essential.
- Resident has to develop these attributes through different mechanism of interaction.

PRACTICAL TRAINING:

A Junior Resident doctor, pursuing a P.G. Degree course is expected to perform major and minor surgical procedures independently as well as under supervision of a faculty member/senior resident. He should preferably maintain a log book of those done and assisted.

She/he should be able to do many major procedures independently such as: (Few examples only given):

- Closed reduction of fractures
- External fixation of compound fractures
- Debridement of crush injuries
- Amputations
- Internal fixation of common simple fractures
- Polio surgery such as TA lingthening, steindler's procedure etc
- Intra-articular injections
- Steroid injections for various painful conditions
- Sequestrectomy in chronic osteomyelitis
- Corrective POP casts for club foot & other congenital deformities
- Biopsy from a mass

He/she should be able to do the following operations under supervision/guidance of senior colleagues/ faculty member (Few examples only given):

• Internal fixation of simple fractures such as fracture of both bones of forearm, supracondylar fracture humerus, malleolar fractures, femur shaft fractures, per trochanteric fractures etc.
• Polio surgery such as Jone's procedure Campbell's procedure, triple arthrodesis, lambrinndi procedure
etc.
• Club foot surgery such as postero-medial soft tissue reease, dilwyn-ewan's procedure, triple arthrodesis, JESS fixator, ilizoror fixator application.

DURATION OF TRAINING AND ROTATION PROGRAMMES (WARD/OT/OPD)

FIRST YEAR

– Spends 6 (six) months in orientation programme including exposure to casualty
– Learns bedside history taking in ward, OT exposures, casualty, ICU requirement and their visit to related disciplines such as physical medicine and rehabilitation/Anesthesia.
– Care of indoor (medical; preoperative and postoperative) patients for a minimum period of 6 months and learn techniques of traction wound care and splintage.
– Attends operation theatre and emergency operations for acclimatization.
– Assists ward rounds and visits other wards with senior colleagues to attend call/consultations from other department.
– Participates in the teaching sessions in ward for bedside clinical in the weekly afternoon seminar/journal club.

After 6 months of orientation during 2 ½ yrs:

– Attends orthopaedics Out Patient Department/OPD 3 day a week
– Discuss problematic cases with the consultant (s) in OPD/ward
– Attends operation room/theatre 3 days a week
– Attend 2 morning rounds/ week
– Care of the indoor patients on beds allotted to him/her.
– Attends the weekly Journal Club and seminar and presents the same by rotation
– Attends scoliosis, polio, hand, CTEV, arthritis clinics and presents cases participates in discussions including therapy-planning etc.
– During the 2 ½ years, the resident must attend the combined teaching Programme of the department of surgery, Neurosurgery and Medicine i.e. clinical meetings, CPC's of students and staff of the whole hospital
– Surgicopathological conference in Pathology Department, with surgeons.
– All kinds of specially prepared lectures by department. Faculty or from R.T./plastic or Neurosurgery Departments.

– Visits by rotation the Rural Clinic for community exposures/work experience.
– Does 24 hours-emergency duty once a week/ as per roster of the department.
– Attends lectures by visiting faculty to the department/college from India/abroad.
– Attends/participate/present papers in state/zonal national conferences.
– Actively participate/help in organization of departmental workshop, courses in specialized areas like Arthroplasty, Arthroscopy, Spine, Hand surgery from time to time.

Research methology / reporting on research: Learns the basics in research methodology and make the thesis protocol within 4 months of admission.
– Problem oriented record keeping including use of computer
– Use of medical literature search including through Internet use, in the library.
– Attends bio statistics classes by arrangement.
– Research Report – writing including preparation of Protocol for Research/Thesis.
– Writing an abstract/short paper/presentation style (slide-making & audiovisual aids).
– Preparation of a report on a research project/Thesis.

Humanity/Ethics:
– Lectures on humanity including personality development, team spirit and ethical issues in patient care and human relationship including, public relations, by Psychologist and public relation officers are to be arranged by the department/college.

Presentation for the Thesis work:
(a) Selection of thesis topic: Subject of thesis will be selected by the candidate under guidance of faculty, which will be approved by the departmental guide and other faculty. The candidate will be asked to submit the protocol within 4 (Four) month of admission after it is scrutinized by departmental faculty. It is to be approved by the central thesis committee of the institute/college if such committee does exist, and the ethical considerations are also discussed in such Research Programme Committee.
(b) Once the thesis protocol is approved the candidate starts his research work under direct supervision of guide and co-guides.
(c) Three/six monthly progress of the thesis will be checked to know the outcomes/or difficulties facedby the candidate.
Candidate will be asked to submit the thesis 6 months before the final exams. At the discretion of director/thesis committee one month extension may be given to a candidate for submission of the protocol and the final thesis for any valid reason for the delay.

Teaching Methods:
The following learning methods are to be used for the teaching of the postgraduate students:

1. *Journal club:* 1 hrs duration –Paper presentation/discussion – once per week (Afternoon).
2. *Seminar:* One seminar every week of one hour duration (Afternoon)
3. *Lecture/discussion:* Lectures on newer topics by faculty, in place of seminar/as per need.
4. Case presentation in the ward and the afternoon special clinics (such as scoliosis/Hand clinics).
Resident will present a clinical case for discussion before a faculty and discussion made pertaining to its management and decision to be recorded in case files.
5. *Case Conference-* Residents one expected to work-up one long case and three short cases and present the same to a faculty member and discuss the management in its entirety on every Monday afternoon.
6. *X-Ray Classes-* Held twice weekly in morning in which the radiologic features of various problems are discussed.
7. *Surgicopathological Conference:*
Special emphasis is made on the surgical pathology and the radiological aspect of the case in the pathology department such exercises helps the orthopaedics/Pathology/Radiology Residents.
8. *Combined Round/Grand Round:*
These exercises are to be done for the hospital once/wk or twice/month involving presentation of usual or difficult patients. Presentations of cases in clinical combined Round and a clinical series/research data on clinical materials for benefit of all clinicians/Pathologists/other related disciplines once in week or forthrightly in the Grand round.
9. *Community camps:*
For rural exposure and also for experiences in preventive aspect in rural situation/hospital/school, patient care camps are to be arranged 2-3/ year, involving residents/junior faculty.
10. *Emergency situation:*
Casualty duty to be arranged by rotation among the PGs with a faculty cover daily by rotation.
11. *Afternoon clinics*:
Special afternoon clinics for different subspecialities in orthopaedics.

12. Besides clinical training for patient care management and for bed side manners:
Daily for ½ to one hour's during ward round with faculty and 1-2 hours in the evening by senior resident/faculty on emergency duty, bed side patient care discussions are to be made.
13. *Clinical teaching*:
In OPD, ward rounds, emergency, ICU and the operation theatres:
Residents/Senior Residents and Faculty on duty in respective places – make discussion on clinical diagnosis/surgical procedures/treatment modalities, including postoperative care and preparation of discharge slip.
14. *Clinical interaction with physiotherapist*:
Clinical interaction with physiotherapist pertaining to management of the patients in post-op mobilization etc.
15. *Research Methodology*:
Course and Lectures are to be arranged for the residents for language proficiency by humanity teachers besides few lectures on human values and ethical issues in patient care.
16. *Writing Thesis*:
Thesis progress is presented once in 3 months and discussion made in the department. Guides/co guides are to hear the problems of the candidate; can provide assistance to the student.
Progressmade or any failure of the candidate may be brought to the notice of college Dean/Principal.

Final Examination & Examiners:

The *oral, clinical and Practical Examination*:

- One and another center to be kept ready in case of any eventuality.
- Not more than 12 P.G. students should be subjected to practical exam in a day during the examination.
- Results of the examination will be declared as pass/failed/pass with distinction (Grade/marks may also be given if necessary as per University Rules).
- While doing so, both, formative and summative assessment will be taken into consideration.

The Examination for the degree (MS-Orthopaedics) shall consist of
1. **Theory exams**:
Papers
2. **Practical Exams**:-
Clinical, Oral, instruments/specimen/specimen/X-rays.

1. ***Theory:*** There shall be four papers: Each being of three hours duration. Each paper will have 8-10 short question from the curriculum.

Paper I	Basic Sciences related to Orthopedics.
Paper II	Principles and Practices of orthopaedics.
Paper III	Recent advances in orthopaedics & trauma surgery.
Paper IV	General Surgical Principles & allied specialties.

2. ***Practical Examination*** –

a) (b) Identification of Surgical Pathology, excised specimens & discussion, reading X-rays & CTScan/MRI, identification of Instruments & discussion, identification of braces & calipers &discussion thereon.

b) (c) Clinical Patient presentation/discussion:

i) One long case:
The long case will be structured comprising – history taking, clinical examination, investigations, decision making, proposed treatment modalities, ethical justification and personal attributes.

(ii) Three short cases:
The short cases will also be structured in which only one particularsystem may be considered and therapy decision/discussion, made.

EXAMINERS/ Final Examinations: (to be decided by university)

(a) There shall be four examiners including two external and two internal. One of the internal examiners will be the Head of Department and he she shall be chairman/Convener.

I. The second internal examiner shall be next senior most member of faculty of the department provided he/she is eligible for such duty.
II. The necessity of an external examiner is to maintain the standard of the examination at the National level.
III. All examiners must be a full time teacher with requisite experience as per MCI guidelines.
IV. Hony teacher with previous full time experience (of 10 years standing) may only bemade examiners if there does not exist a full time qualified faculty under the same university/college. No Hony. Faculty shall be made a chairman/convener of the examination.

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(b) The external examiners will be asked to send two sets of question papers for the theory examination.

i. There will be 2 external examiners from a different university so that the number of questions available, will be double the which will be given to the student in the moderate papers.

ii. The Chief internal examiner or Chairman/Convener will moderate it and finally make two sets of question paper, containing 8-10 shorts questions. He/she shall send both sets of such papers to the university and university will decide to give one of the sets to the students.

(c) All examiners shall be jointly responsible for the examination. In presence of the external examiners, the Chairman and the internal examiner shall make the necessary arrangements for conducting the final examination.

i. Not more than 4 students will be evaluated/examined per day in any Center. For different College/Institution, separate examination center/examiners may be arranged/appointed for convenience and proper administration of the final examination.

ii. While preparing the final results,formative assessment of the students shall be taken into consideration and the results will be sent to the university under seal cover.

Syllabus for individual papers:

Paper-I:

Basic Sciences:

Development of skeleton, histology of cartilage histology & histopathology of bone, physiology of fracture healing and delayed and non-union of bones, histology of skeletal muscle, collagen, physiology and mineralization of bone, physiology of cartilage, biophysical properties of bone and cartilage, metabolic bone disease and related dysfunction of parathyroid glands.

Paper-II:

Principles & Practice of orthopaedics:

- Bone Infections (Pyogenic, tuberculosis syphilis, mycotic infections, salmonella & brucellar osteomyelitis),
- congenital deformities (upper & lower extremities, spine and general defects), developmental conditions (osteogenesis imperfecta, dysplasias, hereditary multiple exostosis etc.)
- diseases of the joints (osteoarthritis, Rheumatoid arthritis, neuropathy joints, ankylosing spondylitis, sero-negative

- spondyloarthropathy, traumatic arthritis etc.)
- orthopaedic neurology,
- tumors of bone.
- Disease of muscle fibrin disease peripheral vascular diseases
- Disorders of hand & their management

Paper-III:

Trauma surgery & Recent advances in orthopaedics

- General principles of fracture management fractures of lower extremity, fractures of pelvis and hip, fractures of upper extremity and shoulder girdle, fractures and dislocations in children, malunited fractures, delayed union and non-union of fractures, acute dislocations, old unreduced dislocations,
- recurrent dislocations.
- Arthroscopy, LASER, Endoscopic minimally invasive spine surgery, allografts & bone banking
- Ilizarov & bone transport, chemotherapy of cancers.

Paper-IV:

(General surgical Principles & orthopedic surgery)

- General surgery, oncology, and & Medicine as applicable to the musculo-skeletal disorders/disease.
- Radiology, Imaging – computed tomography and magnetic resonance imaging, (MRI) and interventional radiology and angiography as related to orthopaedics.
- General pathologic aspects such as wound healing and also pathology and pathogenesis of orthopaedic disease, pharmacology, molecular biology, genetics, cytology, haematology, and immunology as applicable
- to orthopaedics.
- General principles of traumatology and also neck injury.
- Plastic surgery as applicable to orthopaedics.

I. **Orientation program**:
in ward, OPD, OT, Common Foundation Course 6 month.
Emergency (6 months)

II. DISCIPLINE TRAINING (During – 2 ½ yrs)

A. Ward Round daily (Patient care/Teaching)

B. OPD – Case base learning & Patient care

C. Demonstration of operative procedures in OT & Trauma Management in causality

D. Case-presentation/discussion (Afternoon special clinics)

E. Journal Club Weekly
F. Seminar weekly including presentation of thesis progress
G. Surgicopathological conference - monthly
H. Radiology Conference – weekly
I. Thesis submission after final presentation
III. Attendance of State, Zonal/National level conferences workshops/symposium during (2nd – 3rd yr.) Final exams.

ORTHOPAEDIC SURGERY
RECOMMENDED READING ORTHOPAEDIC SURGERY

1. Apleys System of Orthopaedics and fractures Author: Louis Soloman David

2. Orthopaedic Principles and their applications Author: Samvel Turek.

3. Campbell's Operative Orthopaedics Author : Terry Canale

4. Fractures in Children and adult Author : Rockwood and Green

5. Chapman's Orthopaedic Surgery Author : Michael W. Chapman

6. Mercer's Orthopaedic Surgery Author : Robert B Duthie
George Bentiley.

7. Text Book of Orthopaedics Author: John Ebenzer

8. Tachdjians Paediatric Orthopaedics Author : John Anthony Herring

9. Watson and Jones Fractures and joint injuries Author : J.N. Wilson

10. Paediatric Orthopaedics and Fractures Author: W.G.W. Sharrard.

11. Greens Operative Hand Surgery Author : Green

12. The Adult and Paediatric Spine Author : John W.FRYHEYER

13. Orthopaedic Disease Author: Aegetera and Kirkpatrick

14. Bone Tumours Author : Andrew G. Huros

15. Spine Author : James Cyriax

Journals

JOURNALS

Indian Journal of Orthopaedics.
Journal of Bone and Joint Surgery (British & American Volumes).
Orthopaedic Clinics of North America.
Clinical Orthopedics and Related Research
Yearbook of Orthopaedics.
British journal of Rheumatology and Physical Medicine.
Journal of rehabilitation, Bombay.

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The Faculty for setting of examination papers and accomplishment will be:

1) Dr. Deepak Mittal. Head of Department , Department of Orthopaedics, Dr. RML Hospial, Delhi.
2) Dr. RK Arya.
3) Dr. Hitesh Lal.

Dr. Deepak Mittal

Dr. R. K Arya

Dr. Hitesh Lal

Dean

ORTHOPAEDICS — M.S. COURSE

The subcommittee of Board of studies (BOS) for Orthopaedics consists of following faculty:-

1) Dr. Deepak Mittal. Professor & Head of Department, Department of Orthopaedics, Dr. RML Hospital, Delhi @ PGIMER.
2) Dr. RK Arya. Associate Professor, Department of orthopaedics, Department of Orthopaedics, Dr. RML Hospital, Delhi @ PGIMER.
3) Dr. Hitesh Lal. Assistant Professor, Department of Orthopaedics, Department of Orthopaedics, Dr. RML Hospital, Delhi @ PGIMER.

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– Discuss problematic cases with the consultant (s) in OPD/ward
– Attends operation room/theatre 3 days a week
– Attend 2 morning rounds/ week
– Care of the indoor patients on beds allotted to him/her.
– Attends the weekly Journal Club and seminar and presents the same by rotation
– Attends scoliosis, polio, hand, CTEV, arthritis clinics and presents cases participates in discussions including therapy-planning etc.
– During the 2 ½ years, the resident must attend the combined teaching Programme of the department of surgery, Neurosurgery and Medicine i.e. clinical meetings, CPC's of students and staff of the whole hospital
– Surgicopathological conference in Pathology Department, with surgeons.
– All kinds of specially prepared lectures by department. Faculty or from R.T./plastic or Neurosurgery Departments.
– Visits by rotation the Rural Clinic for community exposures/work experience.
– Does 24 hours-emergency duty once a week/ as per roster of the department.
– Attends lectures by visiting faculty to the department/college from India/abroad.
– Attends/participate/present papers in state/zonal national conferences.
– Actively participate/help in organization of departmental workshop, courses in specialized areas like Arthroplasty, Arthroscopy, Spine, Hand surgery from time to time.

Research methodology / reporting on research: Learns the basics in research methodology and make the thesis protocol within 4 months of admission.
– Problem oriented record keeping including use of computer
– Use of medical literature search including through Internet use, in the library.
– Attends bio statistics classes by arrangement.
– Research Report – writing including preparation of Protocol for Research/Thesis.
– Writing an abstract/short paper/presentation style (slide-making & audiovisual aids).
– Preparation of a report on a research project/Thesis.

Humanity/Ethics:
– Lectures on humanity including personality development, team spirit and ethical issues in patient care and human relationship including, public relations, by Psychologist and public relation officers are to be arranged by the department/college.

Presentation for the Thesis work:
(a) Selection of thesis topic: Subject of thesis will be selected by the candidate under guidance of faculty, which will be approved by the departmental guide and other faculty. The candidate will be asked to submit the protocol within 4 (Four) month of admission after it is scrutinized by departmental

faculty. It is to be approved by the central thesis committee of the institute/college if such committee does exist, and the ethical considerations are also discussed in such Research Programme Committee.

(b) Once the thesis protocol is approved the candidate starts his research work under direct supervision of guide and co-guides.

(c) Three/six monthly progress of the thesis will be checked to know the outcomes/or difficulties faced by the candidate.

Candidate will be asked to submit the thesis 6 months before the final exams. At the discretion of director/thesis committee one month extension may be given to a candidate for submission of the protocol and the final thesis for any valid reason for the delay.

Teaching Methods:

The following learning methods are to be used for the teaching of the postgraduate students:

1. *Journal club:* 1 hrs duration –Paper presentation/discussion – once per week (Afternoon).
2. *Seminar:* One seminar every week of one hour duration (Afternoon)
3. *Lecture/discussion:* Lectures on newer topics by faculty, in place of seminar/as per need.
4. Case presentation in the ward and the afternoon special clinics (such as scoliosis/Hand clinics).

Resident will present a clinical case for discussion before a faculty and discussion made pertaining to its management and decision to be recorded in case files.

5. *Case Conference*- Residents one expected to work-up one long case and three short cases and present the same to a faculty member and discuss the management in its entirety on every Monday afternoon.
6. *X-Ray Classes*- Held twice weekly in morning in which the radiologic features of various problems are discussed.
7. *Surgicopathological Conference:*

Special emphasis is made on the surgical pathology and the radiological aspect of the case in the pathology department such exercises helps the orthopaedics/Pathology/Radiology Residents.

8. *Combined Round/Grand Round:*

These exercises are to be done for the hospital once/wk or twice/month involving presentation of usual or difficult patients. Presentations of cases in clinical combined Round and a clinical series/research data on clinical materials for benefit of all clinicians/Pathologists/other related disciplines once in week or forthrightly in the Grand round.

9. *Community camps:*

For rural exposure and also for experiences in preventive aspect in rural situation/hospital/school, patient care camps are to be arranged 2-3/ year, involving residents/junior faculty.

10. *Emergency situation:*
Casualty duty to be arranged by rotation among the PGs with a faculty cover daily by rotation.
11. *Afternoon clinics*:
Scoliosis Clinic- Held once a week. Residents work up the cases of spinal deformity and present them to a faculty member and management plan recorded in case file.
Hand Clinic- Held once a week. All the cases of hand disorders are referred to the clinic and discussed in detail.
CTEV Clinic- Held once a week corrective casts are given and the technique learnt by the residents.
Surgical management in also planned & recorded in case file.
Polio- Clinic- Held once a week, Various braces & Callipers are prescribed and surgical management planned.
12. Besides clinical training for patient care management and for bed side manners:
Daily for ½ to one hour's during ward round with faculty and 1-2 hours in the evening by senior resident/faculty on emergency duty, bed side patient care discussions are to be made.
13. *Clinical teaching*:
In OPD, ward rounds, emergency, ICU and the operation theatres:
Residents/Senior Residents and Faculty on duty in respective places – make discussion on clinical diagnosis/surgical procedures/treatment modalities, including postoperative care and preparation of discharge slip.
14. *Clinical interaction with physiotherapist*:
Clinical interaction with physiotherapist pertaining to management of the patients in post-op mobilization etc.
15. *Research Methodology*:
Course and Lectures are to be arranged for the residents for language proficiency by humanity teachers besides few lectures on human values and ethical issues in patient care.
16. *Writing Thesis*:
Thesis progress is presented once in 3 months and discussion made in the department. Guides/co guides are to hear the problems of the candidate; can provide assistance to the student.
Progress made or any failure of the candidate may be brought to the notice of college Dean/Principal.

Final Examination & Examiners:

The *oral, clinical and Practical Examination*:

- One and another centre to be kept ready in case of any eventuality.

- Not more than 12 P.G. students should be subjected to practical exam in a day during the examination.
- Results of the examination will be declared as pass/failed/pass with distinction (Grade/marks may also be given if necessary as per University Rules).
- While doing so, both, formative and summative assessment will be taken into consideration.

The Examination for the degree (MS-Orthopaedics) shall consist of
1. **Theory exams**:
Papers
2. **Practical Exams**:-
Clinical, Oral, instruments/specimen/specimen/X-rays.

1. ***Theory:*** There shall be four papers: Each being of three hours duration. Each paper will have 8-10 short questions from the curriculum.

Paper I Basic Sciences related to Orthopaedics.

Paper II Principles and Practices of orthopaedics.

Paper III Recent advances in orthopaedics & trauma surgery.

Paper IV General Surgical Principles & allied specialties.

2. ***Practical Examination*** –

b) (b) Identification of Surgical Pathology, excised specimens & discussion, reading X-rays & CTScan/MRI, identification of Instruments & discussion, identification of braces & callipers &discussion thereon.

c) (c) Clinical Patient presentation/discussion:

i) One long case:
The long case will be structured comprising – history taking, clinical examination, investigations, decision making, proposed treatment modalities, ethical justification and personal attributes.

(ii) Three short cases:
The short cases will also be structured in which only one particular system may be considered and therapy decision/discussion, made.

EXAMINERS/ Final Examinations:

(a) There shall be four examiners including two external and two internal. One of the internal examiners will be the Head of Department and he she shall be chairman/Convener.

I. The second internal examiner shall be next senior most member of faculty of the department provided he/she is eligible for such duty.
II. The necessity of an external examiner is to maintain the standard of the examination at the National level.
III. All examiners must be a full time teacher with requisite experience as per MCI guidelines.
IV. Hony teacher with previous full time experience (of 10 years standing) may only be made examiners if there does not exist a full time qualified faculty under the same university/college. No Hony. Faculty shall be made a chairman/convener of the examination.

(b) The external examiners will be asked to send two sets of question papers for the theory examination.

i. There will be 2 external examiners from a different university so that the number of questions available will be double the will be given to the student in the moderate papers.
ii. The Chief internal examiner or Chairman/Convener will moderate it and finally make two sets of question paper, containing 8-10 shorts questions. He/she shall send both sets of such papers to the university and university will decide to give one of the sets to the students.

(c) All examiners shall be jointly responsible for the examination. In presence of the external examiners, the Chairman and the internal examiner shall make the necessary arrangements for conducting the final examination.

i. Not more than 4 students will be evaluated/examined per day in any Centre. For different College/Institution, separate examination centre/examiners may be arranged/appointed for convenience and proper administration of the final examination.
ii. While preparing the final results, formative assessment of the students shall be taken into consideration and the results will be sent to the university under seal cover.

Syllabus for individual papers:

Paper-I:

Basic Sciences:

Development of skeleton, histology of cartilage histology & histopathology of bone, physiology of fracture healing and delayed and non-union of bones,

histology of skeletal muscle, collagen, physiology and mineralization of bone, physiology of cartilage, biophysical properties of bone and cartilage, metabolic bone disease and related dysfunction of parathyroid glands.

Paper-II:

Principles & Practice of orthopaedics:

- Bone Infections (Pyogenic, tuberculosis syphilis, mycotic infections, salmonella & brucellar osteomyelitis),
- congenital deformities (upper & lower extremities, spine and general defects), developmental conditions (osteogenesis imperfecta, dysplasias, hereditary multiple exostosis etc.)
- diseases of the joints (osteoarthritis, Rheumatoid arthritis, neuropathy joints, ankylosing spondylitis, sero-negative
- spondyloarthropathy, traumatic arthritis etc.)
- orthopaedic neurology,
- tumors of bone.
- Disease of muscle fibrin disease peripheral vascular diseases
- Disorders of hand & their management

Paper-III:

Trauma surgery & Recent advances in orthopaedics

- General principles of fracture management fractures of lower extremity, fractures of pelvis and hip, fractures of upper extremity and shoulder girdle, fractures and dislocations in children, malunited fractures, delayed union and non-union of fractures, acute dislocations, old unreduced dislocations,
- recurrent dislocations.
- Arthroscopy, LASER, Endoscopic minimally invasive spine surgery, allografts & bone banking
- Ilizarov & bone transport, chemotherapy of cancers.

Paper-IV:

(General surgical Principles & orthopaedic surgery)

- General surgery, oncology, and & Medicine as applicable to the musculo-skeletal disorders/disease.
- Radiology, Imaging – computed tomography and magnetic resonance imaging, (MRI) and interventional radiology and angiography as related to orthopaedics.
- General pathologic aspects such as wound healing and also pathology and pathogenesis of orthopaedic disease, pharmacology, molecular biology, genetics, cytology, haematology, and immunology as applicable

- to orthopaedics.
- General principles of traumatology and also neck injury,
- Plastic surgery as applicable to orthopaedics.

I. **Orientation program**:
in ward, OPD, OT, Common Foundation Course 6 months.
Emergency (6 months)

II. DISCIPLINE TRAINING (During – 2 ½ yrs)

A. Ward Round daily (Patient care/Teaching)
B. OPD – Case base learning & Patient care
C. Demonstration of operative procedures in OT & Trauma Management in causality
D. Case-presentation/discussion (Afternoon special clinics)
E. Journal Club Weekly
F. Seminar weekly including presentation of thesis progress
G. Surgicopathological conference - monthly
H. Radiology Conference – weekly
I. Thesis submission after final presentation

III. Attendance of State, Zonal/National level conferences workshops/symposium during (2nd – 3rd yr.) Final exams.

ORTHOPAEDIC SURGERY
RECOMMENDED READING ORTHOPAEDIC SURGERY

1. Apleys System of Orthopaedics and fractures Author: Louis Soloman David

2. Orthopaedic Principles and their applications Author: Samuel Turek.

3. Campbell's Operative Orthopaedics Author : Terry Canale

4. Fractures in Children and adult Author : Rockwood and Green

5. Chapman's Orthopaedic Surgery Author : Michael W. Chapman

6. Mercer's Orthopaedic Surgery Author : Robert B Duthie
George Bentiley.

7. Text Book of Orthopaedics Author: John Ebenezer

8. Tachdjians Paediatric Orthopaedics Author : John Anthony Herring

9. Watson and Jones Fractures and joint injuries Author : J.N. Wilson

10. Paediatric Orthopaedics and Fractures Author: W.G.W. Sharrard.

11. Greens Operative Hand Surgery Author : Green

12. The Adult and Paediatric Spine Author : John W.FRYHEYER

13. Orthopaedic Disease Author: Aegetera and Kirkpatrick

14. Bone Tumours Author : Andrew G. Huros

15. Spine Author : James Cyriax

Journals

JOURNALS

Indian Journal of Orthopaedics.
Journal of Bone and Joint Surgery (British & American Volumes).
Orthopaedic Clinics of North America.
Clinical Orthopaedics and Related Research
Yearbook of Orthopaedics.
British journal of Rheumatology and Physical Medicine.
Journal of rehabilitation, Bombay.