

Faculty of Medicine



JSS Academy of Higher Education & Research

(Deemed to be University)

Accredited "A" Grade by NAAC

Sri Shivarathreshwara Nagar, Mysuru – 570 015

Regulation & Syllabus

Post Graduate Degree & Diploma Programs
ORTHOPAEDICS 2016

MS/PG Dip

Regulation & Syllabus

MS ORTHOPAEDICS

2016



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REGULATION AND SYLLABUS FOR POST GRADUATE DEGREE PROGRAMS 2016

MS & DIPLOMA ORTHOPAEDICS

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CHAPTER I

REGULATION FOR POST GRADUATE DEGREE AND DIPLOMA COURSES

1. Branch of study

Post graduate degree courses

Doctor of Medicine

- a) Anaesthesiology
- b) Anatomy
- c) Biochemistry
- d) Community medicine
- e) Dermatology, venereology and leprosy
- f) Emergency medicine
- g) Forensic medicine
- h) General medicine
- i) Hospital administration
- j) Microbiology
- k) Pathology
- l) Paediatrics
- m) Pharmacology
- n) Physiology
- o) Psychiatry
- p) Tuberculosis and Respiratory Medicine
- q) Radio Diagnosis

Master of Surgery

- a) General surgery
- b) Obstetrics and gynaecology
- c) Ophthalmology
- d) Orthopaedics
- e) Otorhinolaryngology

Post graduate diploma courses

- a) Anaesthesiology (DA)
- b) Child Health (DCH)
- c) Clinical Pathology (DCP)
- d) Dermatology, Venereology & Leprosy (DDVL)
- e) Medical Radio Diagnosis (DMRD)
- f) Obstetrics & Gynaecology (DGO)
- g) Ophthalmology (DO)
- h) Orthopaedics (D Ortho)
- i) Otolaryngology (DLO)
- j) Psychiatric Medicine (DPM)

2. Eligibility for admission

MD / MS Degree and Diploma courses: A candidate who has passed final year MBBS examination after pursuing a study in a medical college recognized by the Medical Council of India and has completed one year compulsory rotating internship in a teaching institution or other institution recognized by the Medical Council of India, and has obtained permanent registration of any State Medical Council, shall be eligible for admission.

3. Admission

A candidate desirous of admission to Post Graduate Medical Programmes MD/ MS / PG Diploma Courses is required to complete the application form and submit to the Deemed to be University along with prescribed documents on or before the scheduled date. Eligibility criteria, application form and details of documents to be submitted are available in the Deemed to be University website: www.jssuni.edu.in.

4. Registration

A candidate who has been admitted to postgraduate course shall register in the Deemed to be University within a month of admission after paying the registration fee.

5. Intake of students

The intake of students to each course shall be in accordance with the MCI.

6. Duration of study

MD, MS Degree Courses: The course of study shall be 3 completed years including the period of examination.

Provided that in case of students having a recognized 2 years postgraduate diploma course in the same subject, the period of training including the period of examination shall be 2 years.

Diploma courses: The course of study shall be 2 completed years including the examination period.

7. Methodology of training

The training of postgraduate for degree/diploma shall be residency pattern, with graded responsibilities in the management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, grand rounds, case demonstration, clinics, journal review meetings, CPC and clinical meetings. Every candidate shall participate in the teaching and training programme of undergraduate students. Training should include involvement in laboratory and experimental work, and research studies. Basic medical sciences students should be posted to allied and relevant clinical departments or institutions. Similarly, clinical subjects' students should be posted to basic medical sciences and allied specialty departments or institutions.

8. Attendance, progress and conduct

A candidate pursuing degree/diploma course, shall work in the concerned department of the institution for the full period as full time student. No candidate is permitted to run a clinic/laboratory/nursing home while studying postgraduate course, nor can he/she work in a nursing home or other hospitals/

clinic/laboratory while studying postgraduate course.

Each year shall be taken as a unit for the purpose of calculating attendance.

Every student shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself / herself from work without valid reasons.

Every candidate is required to attend a minimum of 80% of the training during each academic year of the post graduate course. Provided, further, leave of any kind shall not be counted as part of academic term without prejudice to minimum 80% attendance of training period every year.

Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the Deemed to be University Examinations.

9. Monitoring progress of study

Work diary / Log Book: Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention shall be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. The work diary shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the Deemed to be University practical/clinical examination.

Periodic tests: In case of degree courses of three years duration (MD/MS), the concerned departments shall conduct three tests, two of them be annual tests, one at the end of first year and the other at the end of the second year. The third test shall be held three months before the final examination. The tests shall include written papers, practical / clinical and viva voce. Records and marks obtained in such tests shall be maintained by the Head of the Department and sent to the Deemed to be University, when called for.

In case of diploma courses of two years duration, the concerned departments shall conduct two tests, one of them at the end of first year and the other in the second year, three months before the final examination. The tests shall include written papers, practical / clinical and viva voce.

Records: Records and marks obtained in tests shall be maintained by the Head of the Department and shall be made available to the Deemed to be University or MCI.

10. Dissertation

Every candidate pursuing MD/MS degree course is required to carry out work on a selected research project under the guidance of a recognised post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.

Every candidate shall submit to the Controller of Examinations of the Deemed to be University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the course, on or before the dates notified by the Deemed to be University. The synopsis shall be sent through proper channel.

Such synopsis will be reviewed and the dissertation topic will be registered by the Deemed to be University. No change in the dissertation topic or guide shall be made without prior approval of the Deemed to be University.

The dissertation should be written under the following headings:

- a) Introduction
- b) Aims or Objectives of study
- c) Review of Literature
- d) Material and Methods
- e) Results
- f) Discussion
- g) Conclusion
- h) Summary
- i) References
- j) Tables
- k) Annexure
- l) Proof of Paper presentation and publication

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

Four copies of dissertation thus prepared shall be submitted to the Controller of Examinations, six months before final examination, on or before the dates notified by the Deemed to be University.

The dissertation shall be valued by examiners appointed by the Deemed to be University. Approval of dissertation work is an essential precondition for a candidate to appear in the Deemed to be University examination.

Guide: The academic qualification and teaching experience required for recognition as a guide for dissertation work is as per MCI Minimum Qualifications for Teachers in Postgraduate Medical Education Regulations, 2000. Teachers in a medical college/institution having a total of eight years teaching experience out of which at least five years teaching experience as Assistant Professor gained after obtaining post graduate degree shall be recognised as post graduate teachers.

Co Guide: A Co-guide may be included provided the work requires substantial contribution from a sister department or from another medical institution recognised for teaching/training by JSS Deemed to be University / Medical Council of India.

Change of guide: In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the Deemed to be University.

A postgraduate student is required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.

11. Schedule of examination

The examination for MD / MS courses shall be held at the end of three academic years (six academic terms). The examination for the diploma courses shall be held at the end of two academic years.

For students who have already passed Post Graduate Diploma and appearing for MD examination, the examination shall be conducted after two academic years including submission of dissertation. The Deemed to be University shall conduct two examinations in a year at an interval of four to six months between the two examinations. Not more than two examinations shall be conducted in an academic year.

12. Scheme of examination

MD/MS

Dissertation: Every candidate shall carry out work and submit a dissertation as indicated in Sl. No. 10. Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

Written Examination (Theory): A written examination shall consist of four question papers, each of three hours duration. Each paper shall carry 100 marks. Out of the four papers, the 1st paper in clinical subjects will be on applied aspects of basic medical sciences. Recent advances may be asked in any or all the papers. In basic medical subjects and para-clinical subjects, questions on applied clinical aspects shall also be asked.

Pattern of Theory Examination Question Paper:

Each paper shall consist of two long essay questions each carrying 20 marks, 3 short essay questions each carrying 10 marks and 6 short answer questions each carrying 5 marks. Total marks for each paper shall be 100.

Practical/Clinical Examination: In case of Practical examination for the subjects in Basic Medical Sciences Practical Examination shall be conducted to test the knowledge and competence of the candidates for making valid and relevant observations based on the experimental/Laboratory studies and his ability to perform such studies as are relevant to his subject.

Clinical examination for the subjects in Clinical Sciences shall be conducted to test the knowledge and competence of the candidates for undertaking independent work as a specialist/Teacher, for which candidates shall examine a minimum one long case and two short cases.

The total marks for Practical / clinical examination shall be 200.

Viva Voce: Viva Voce shall be thorough and shall aim at assessing the candidate knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the speciality, which form a part of the examination.

The total marks shall be 100 and the distribution of marks shall be as under:

- | | | |
|-----|---|----|
| i) | For examination of all components of syllabus | 80 |
| ii) | For Pedagogy | 20 |

If there is skills evaluation, 10 marks shall be reserved for Pedagogy and 10 marks for skill evaluation.

Examiners. There shall be at least four examiners in each subject. Out of

them, two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the Medical Council of India.

Criteria for declaring as pass in Deemed to be University Examination:

A candidate shall pass theory and practical including clinical and viva-voce examination separately and shall obtain 40% marks in each theory paper and not less than 50% marks cumulatively in all the four papers for post graduate degree examination to be declared as pass.

A candidate obtaining less than 40% marks in any paper and obtaining less than 50% of marks cumulatively in all the four papers for postgraduate degree examination shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Controller of Examinations.

Declaration of class: A successful candidate passing the Deemed to be University examination in first attempt and secures grand total aggregate 75% of marks or more will be declared to have passed the examination with distinction, 65% but below 75% declared as First Class and 50% but below 65% declared as Second Class.

A candidate passing the Deemed to be University examination in more than one attempt shall be declared as Pass Class irrespective of the percentage of marks.

Post Graduate Diploma Examinations

Diploma examination in any subject shall consist of theory (written papers), Practical / Clinical and Viva - Voce.

Theory: There shall be three written question papers each carrying 100 marks. Each paper will be of three hours duration. In clinical subjects one paper out of this shall be on basic medical sciences. In basic medical subjects and Para-clinical subjects, questions on applied clinical aspects shall also be asked.

Pattern of Theory Examination Question Paper:

Each paper shall consist of two long essay questions each carrying 20 marks, 3 short essay questions each carrying 10 marks and 6 short answer questions each carrying 5 marks. Total marks for each paper shall be 100.

Practical Clinical Examination: In case of practical examination it shall be aimed at assessing competence, skills related to laboratory procedures as well as testing students ability to make relevant and valid observations, interpretation of laboratory or experimental work relevant to his/her subject.

In case of clinical examination, it shall aim at examining clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate shall examine at least one long case and two short cases.

The maximum marks for Practical / Clinical shall be 150.

Viva Voce Examination: Viva Voce examination shall be thorough and shall aim at assessing the candidate's knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the speciality, which shall form a part of the examination. The total marks shall be 50.

Examiners. There shall be at least four examiners in each subject. Out of

them, two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the Medical Council of India.

Criteria for declaring as pass in Deemed to be University Examination:

A candidate shall pass theory and practical including clinical and viva-voce examination separately and shall obtain 40% marks in each theory paper and not less than 50% marks cumulatively in all the three papers for post graduate diploma examination to be declared as pass.

A candidate obtaining less than 40% marks in any paper and obtaining less than 50% of marks cumulatively in all the three papers for post graduate diploma examination shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Controller of Examinations.

Declaration of class: A successful candidate passing the Deemed to be University examination in first attempt and secures grand total aggregate 75% of marks or more will be declared to have passed the examination with distinction, 65% but below 75% declared as First Class and 50% but below 65% declared as Second Class.

A candidate passing the Deemed to be University examination in more than one attempt shall be declared as Pass Class irrespective of the percentage of marks.

13. Number of candidates per day

The maximum number of candidates to be examined in Clinical/ practical and Oral on any day shall not exceed eight for M.D./M.S. degree, eight for diploma.

CHAPTER II

GOALS AND GENERAL OBJECTIVES OF POSTGRADUATE MEDICAL EDUCATION PROGRAM

GOAL

The goal of postgraduate medical education shall be to produce competent specialists and/or medical teachers:

1. Who shall recognize the health needs of the community and carry out professional obligations ethically and in keeping with the objectives of the national health policy.
2. Who shall have mastered most of the competencies, pertaining to the specialty, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system.
3. Who shall be aware of the contemporary advance and developments in the discipline concerned.
4. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology and
5. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

GENERAL OBJECTIVES

At the end of the postgraduate training in the discipline concerned the student shall be able to:

1. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
2. Practice the specialist concerned ethically and in step with the principles of primary health care.
3. Demonstrate sufficient understanding of the basic sciences relevant to the concerned specialty.
4. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and primitive measure/strategies.
5. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
6. Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the specialty.
7. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
8. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behavior in accordance with the societal norms and expectations.
9. Play the assigned role in the implementation of national health programme, effectively and responsibly.

10. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
11. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
12. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
13. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
14. Function as an effective leader of a health team engaged in health care, research or training.

STATEMENT OF THE COMPETENCIES: Keeping in view the general objectives of postgraduate training, each discipline shall aim at development of specific competencies which shall be defined and spelt out in clear terms. Each department shall produce a statement and bring it to the notice of the trainees in the beginning of the programme so that he or she can direct the efforts towards the attainment of these competencies.

COMPONENTS OF THE POSTGRADUATE CURRICULUM:

The major components of the Postgraduate curriculum shall be:

- Theoretical knowledge
- Practical and clinical skills
- Dissertation skills.
- Attitudes including communication skills.
- Training in Research Methodology, Medical Ethics and Medicolegal aspects.

(Source: Medical Council of India, Regulations on Postgraduate Medical Education, 2000)

CHAPTER III

Monitoring Learning Progress

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring shall be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Model checklists are given in this chapter which may be copied and used.

The learning outcomes to be assessed should include:

1. Personal Attitudes.
2. Acquisition of Knowledge.
3. Clinical and operative skills and
4. Teaching skills.

1. Personal Attitudes: The essential items are:

- a) Caring attitude.
- b) Initiative.
- c) Organisational ability.
- d) Potential to cope with stressful situations and undertake responsibility.
- e) Trustworthiness and reliability.
- f) To understand and communicate intelligibly with patients and others.
- g) To behave in a manner that establishes professional relationships with patients and colleagues.
- h) Ability to work in a team.
- i) A critical enquiring approach to the acquisition of knowledge.

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

2. Acquisition of Knowledge: The methods used comprise of 'Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The log book should periodically be validated by the supervisors. Some of the activities are listed. The list is not complete. Institutions may include additional activities, if so, desired.

- a) **Journal Review Meeting (Journal Club).** The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist (see Model Checklist – I, Chapter III)
- b) **Seminars / Symposia.** The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio- visual aids are to be assessed using a checklist (see Model Checklist-II, Chapter III)

- c) **Clinico-pathological conferences.** This should be a multidisciplinary study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.
- d) **Medical Audit.** Periodic morbidity and mortality meeting shall be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

3. Clinical skills:

- a. **Day to Day work:** Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see Model Checklist III, Chapter III).
 - b. **Clinical meetings:** Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist IV, Chapter III).
 - c. **Clinical and Procedural skills:** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book. (Table No.3, Chapter III).
4. **Teaching skills:** Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist V, Chapter III).
 5. **Periodic tests:** In case of degree courses of three years duration, the department may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. In case of diploma courses of two year duration, the departments may conduct two tests. One of them at the end of first year and the other in the second year, three months before the final examination. The tests may include written papers, practical / clinical and viva voce.
 6. **Work diary:** Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.
 7. **Records:** Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the Deemed to be University or MCI.
 8. **Log book:** The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate. Format for the log book for the different activities is given in Tables 1, 2 and 3 of Chapter III. Copies may be made and used by the institutions.

Procedure for defaulters: Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set him or herself right.

Format of Model Check Lists

Check List-I

MODEL CHECK-LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student:

Name of the Faculty/Observer:

Date:

Sl No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper / subject					
6.	Audio-visual aids used					
7.	Ability to defend the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

Check List – II

**MODEL CHECK-LIST FOR EVALUATION OF
SEMINAR PRESENTATIONS**

Name of the Student:

Name of the Faculty/Observer:

Date:

Sl No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Whether other relevant publications consulted					
2.	Whether cross references have been consulted					
3.	Completeness of Preparation					
4.	Clarity of Presentation					
5.	Understanding of subject					
6.	Ability to answer questions					
7.	Time scheduling					
8.	Appropriate use of Audio-Visual aids					
9.	Overall Performance					
10.	Any other observation					
	Total Score					

Check List - III

MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN WARD / OPD

(To be completed once a month by respective Unit Heads,
including posting in other departments)

Name of the Student:

Name of the Faculty/Observer:

Date:

SI No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases during rounds					
6.	Investigations work up					
7.	Beside manners					
8.	Rapport with patients					
9.	Counseling patient's relatives for blood donation or Postmortem and Case follow up.					
10.	Overall quality of ward work					
	Total Score					

Check List - IV
EVALUATION FORM FOR CLINICAL PRESENTATION

Name of the Student:

Name of the Faculty:

Date:

Sl No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of Presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Whether any major signs missed or misinterpreted					
9.	Diagnosis: Whether it follows logically from history and findings					
10.	Investigations required <ul style="list-style-type: none"> • Complete list • Relevant order • Interpretation of investigations 					
11.	Ability to react to questioning Whether it follows logically from history and findings					
12.	Ability to defend diagnosis					
13.	Ability to justify differential diagnosis					
14.	Others					
	Total Score					

Check List - V

MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

SI No		Strong Point	Weak Point
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	The introduction		
4.	The sequence of ideas		
5.	The use of practical examples and/or illustrations		
6.	Speaking style (enjoyable, monotonous, etc., specify)		
7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Asks questions		
10.	Answers questions asked by the audience		
11.	Rapport of speaker with his audience		
12.	Effectiveness of the talk		
13.	Uses AV aids appropriately		

Check List - VI

MODEL CHECK LIST FOR DISSERTATION PRESENTATION

Name of the Student:

Name of the Faculty:

Date:

Sl No	Points to be considered divine	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting a topic					
2.	Appropriate review of literature					
3.	Discussion with guide & other faculty					
4.	Quality of Protocol					
5.	Preparation of proforma					
	Total Score					

Check List - VII

**CONTINUOUS EVALUATION OF DISSERTATION WORK
BY GUIDE / CO GUIDE**

Name of the Student:

Name of the Faculty:

Date:

SI No	Items for observation during presentations	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide/co-guide					
2.	Regular collection of case Material					
3.	Depth of analysis / discussion					
4.	Departmental presentation of findings					
5.	Quality of final output					
6.	Others					
	Total Score					

LOG BOOK

Table 1: Academic activities attended

Name:

Admission Year:

Date	Type of Activity Specify Seminar, Journal Club, Presentation, UG teaching	Particulars

LOG BOOK

Table 2: Academic presentations made by the student

Name:

Admission year:

Date	Topic	Type of Presentation Specify Seminar, Journal Club, Presentation, UG teaching

LOG BOOK

Table 3: Diagnostic and Operative procedures performed

Name:

Admission year:

College:

Date	Name	ID No.	Procedure	Category O, A, PA, PI*

*** Key:**

O - Washed up and observed

A - Assisted a more senior Surgeon

PA - Performed procedure under the direct supervision of a senior Surgeon
PI - Performed independently

Model Overall Assessment Sheet

SI No	Faculty Member & Others	Name of Student and Mean Score*																		
		A	B	C	D	E	F	G	H	I	J									
1.	Journal Review Presentations																			
2.	Seminars																			
3.	Clinical work in wards																			
4.	Clinical presentation																			
5.	Teaching skill practice																			
	Total Score																			

Note: Use separate sheet for each year.

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

* KEY:

Mean score : Is the sum of all the scores of checklists 1 to 7.
A, B, Name of the trainees.

Chapter IV

Medical Ethics Sensitisation and Practice

Introduction

There is now a shift from the traditional individual patient- doctor relationship and medical care. With the advances in science and technology and the needs of patients, their families and the community, there is an increased concern with the health of society. There is a shift to greater accountability to the society. Doctors and health professionals are confronted with many ethical problems. It is, therefore necessary to be prepared to deal with these problems. To accomplish the Goal and General Objective stated in Chapter II and develop human values it is urged that ethical sensitisation be achieved by lectures or discussion on ethical issues, clinical discussion of cases with an important ethical component and by including ethical aspects in discussion in all case presentation, bedside rounds and academic postgraduate programmes.

Course Contents

1. Introduction to Medical Ethics

- What is Ethics?
- What are values and norms?
- Relationship between being ethical and human fulfillment.
- How to form a value system in one's personal and professional life.
- Heteronomous Ethics and Autonomous Ethics.
- Freedom and personal Responsibility.

2. Definition of Medical Ethics

- Difference between medical ethics and bio-ethics
- Major Principles of Medical Ethics
 - Beneficence = fraternity
 - Justice = equality
 - Self determination (autonomy) = liberty

3. Perspective of Medical Ethics

- The Hippocratic Oath.
- The Declaration of Helsinki.
- The WHO Declaration of Geneva.
- International code of Medical Ethics. (1993)
- Medical Council of India Code of Ethics.

4. Ethics of the Individual

- The patient as a person.
- The Right to be respected.
- Truth and Confidentiality.
- The autonomy of decision.
- The concept of disease, health and healing.
- The Right to health.
- Ethics of Behaviour modification.
- The Physician – Patient relationship.
- Organ donation.

5. The Ethics of Human life

- What is human life?
- Criteria for distinguishing the human and the non-human.

- Reasons for respecting human life.
- The beginning of human life.
- Conception, contraception.
- Abortion.
- Prenatal sex-determination.
- In vitro fertilization (IVF).
- Artificial Insemination by Husband (AIH).
- Artificial Insemination by Donor (AID).
- Surrogate motherhood.
- Semen Intra-fallopian Transfer (SIFT).
- Gamete Intra-fallopian Transfer (GIFT).
- Zygote Intra-fallopian Transfer (ZIFT).
- Genetic Engineering.

6. The Family and Society in Medical Ethics

- The Ethics of human sexuality.
- Family Planning perspectives.
- Prolongation of life.
- Advanced life directives – The Living Will
- Euthanasia
- Cancer and Terminal Care

7. Profession Ethics

- Code of conduct.
- Contract and confidentiality.
- Charging of fees, Fee-splitting.
- Prescription of drugs.
- Over-investigating the patient.
- Low – Cost drugs, vitamins and tonics.
- Allocation of resources in health care.
- Malpractice and Negligence.

8. Research Ethics

- Animal and experimental research / humaneness.
- Human experimentation.
- Human volunteer research — Informed Consent Drug trials.

9. Ethical workshop of cases

- Gathering all scientific factors.
- Gathering all human factors.
- Gathering all value factors.
- Identifying areas of value — conflict, setting of priorities
- Working out criteria towards decisions.

Recommended Reading

1. Francis C.M., Medical Ethics, 1 Ed, 1993, Jaypee Brothers, New Delhi.
2. Good Clinical Practices:GOI Guidelines for clinical trials on Pharmaceutical Products in India (www.cdsco.nic.in)
3. INSA Guidelines for care and use of Animals in Research – 2000.
4. CPCSEA Guidelines 2001 (www.cpcsea.org.)
5. Ethical Guidelines for Biomedical Research on Human Subjects, 2000, ICMR, New Delhi.
6. ICMR Guidelines on animal use 2001, ICMR, New Delhi.

CHAPTER V- SYLLABUS

M S ORTHOPAEDICS

1. Goals & Objectives

At the end of the course, the candidate should be:

1. Aware of the current concepts in quality care in orthopaedics and musculo-skeletal trauma and also of diagnosis, therapeutic, medical or surgical management of orthopedic problems.
2. Able to offer initial primary management of acute orthopedic and trauma emergencies.
3. Aware of the limitations and refer readily to major centers for more qualified care of cases which warrant such referral.
4. Aware of research methodology and be able to conduct research and publish the work done.
5. Able to effectively communicate with patients, their family members, people and professional colleagues.
6. Able to exercise empathy and a caring attitude and maintain high ethical standards.
7. Continue to evince keen interest in continuing education irrespective of whether he/she is in a teaching institution or in clinical practice.

2. Course Contents – Essential theoretical knowledge.

I. Basic Sciences

1. Anatomy

- a. Musculoskeletal anatomy: anatomy of the shoulder girdle, pelvic girdle, upper & lower limbs, anatomy of the spine and chest.
- b. Embryology and development of musculoskeletal system.
- c. Histology / Related to musculoskeletal system

2. Physiology

- a. Physiology of musculoskeletal system.
- b. Metabolism of bone, hormonal influence on musculoskeletal system & other related orthopedic physiology.

3. Pathology

- a. General pathology.
- b. Tumor pathology in musculoskeletal system.
- c. Other orthopedic pathology.

4. Biochemistry

- a. General biochemistry.
- b. Biochemical aspects related to orthopaedic diseases.

II. Clinical Orthopaedic

1. General orthopedics
 - a. General principles of healing of injury & musculoskeletal trauma.
 - b. Systemic management of the injured & body response to trauma.
 - c. General principles of management of Neurovascular injury.

- d. Management of poly trauma.
- e. Consequences of musculoskeletal trauma & rehabilitation of the injured.
- f. General principles of management musculoskeletal trauma - surgical and conservative.
- g. Compound injuries – management and stabilization procedures in orthopaedics.
- h. General principles of management musculoskeletal trauma in children.

III. Orthopaedic Traumatology

- a. Musculoskeletal trauma in shoulder girdle and upper limb.
- b. Musculoskeletal trauma in pelvic girdle and lower limb.
- c. Injuries of the spine and chest and management of paraplegia.
- d. Pathological fractures and management.

IV. Diseases in Orthopaedics

- a. Congenital malformations.
- b. Metabolic, developmental & hormonal disorders in musculoskeletal system.
- c. Epiphyseal and neuromuscular affections in children.
- d. Infective diseases in musculoskeletal system & leprosy.
- e. Arthritis and rheumatic disease.
- f. Tumours of musculoskeletal system.
- g. Amputations.
- h. Prosthetics and orthotics.
- i. Physical medicine and rehabilitation.

V. Sports Medicine Including Arthroscopy

VI. Essential diagnostic skills - Instrumentation

1. Radiology
 - a. General musculoskeletal radiology – plain x-ray.
 - b. MRI.
 - c. CT scan.
 - d. Scintigraphy & bone scan.
 - e. Stress radiography.
 - f. Ultrasonography.
2. Interventional radiography.
 - a. Sinogram.
 - b. CT guided biopsy.
 - c. Arthrogram.
 - d. U/S guided procedures
3. Arthroscopy.
4. Biopsy:
 - a. Trocar.
 - b. FNAC.
5. Haematological, Microbiology, Bio chemical investigations related to Musculoskeletal system.

VII. Surgical Skills

- 1. Anaesthesia:** Regional anaesthesia.
 - a. Wrist block & digital block.
 - b. Femoral block.
 - c. Ankle block.
 - d. Brachial block & inter scalene block.
 - e. Spinal anaesthesia.
 - f. IVRA.

VIII. Surgical Procedures

1. Pelvic girdle & lower limb

- a. Fracture fixation.
- b. Osteotomies and arthrodesis in lower limb.
- c. HRA in hip joint.
- d. Soft tissue surgeries.
- e. Foot and ankle surgery.
- f. Management of nonunion of fractures with Illizarov.
- g. Deformity correction with Illizarov.
- h. Ligamentous reconstruction of knee joint.
- i. Plastic reconstruction and other reconstructive procedures in musculoskeletal trauma.
- j. Arthroscopic surgeries.
- k. Total hip arthroplasty.
- l. Total knee arthroplasty.
- m. Total ankle arthroplasty.
- n. Stabilization of pelvic fracture by external fixator.
- o. Acetabular fracture fixation and pelvic osteotomies.

2. Shoulder Girdle & Upper Limb

- a. Fracture fixation, osteotomies and arthrodesis in upper limb.
- b. Reconstructive surgeries in shoulder joint
- c. Soft tissue surgeries.
- d. Elbow and hand surgery.
- e. Management of nonunion of fractures with Illizarov.
- f. Deformity correction with Illizarov.
- g. Plastic reconstruction and other reconstructive procedures in musculoskeletal tumours.
- h. Arthroscopic surgeries.
- i. Total shoulder arthroplasty.
- j. Total elbow arthroplasty.
- k. Wrist arthrodeses

3. Spine Surgeries

- a. Posterior spinal fusion.
- b. Disc surgery & decompressive procedures in spine.
- c. Instrumentation in spine.
- d. Endoscopic surgery in spine.
- e. Deformity correction in spine.
- f. Surgical procedures in TB Spine.

4. Surgical Procedures - Emergency

- a. Primary wound debridement & external fixater application.
- b. Emergents amputations.
- c. Primary internal fixation for compound fractures.
- d. Neurovascular repair and reconstruction.

3. Graded responsibility in care of patients and operative work

Ist Year:

1. Trauma care:
 - a. Closed reductions of fractures, Plaster application.
 - b. Debridement of open fractures, external fixations.
 - c. Internal fixations of minor fractures with K wire.
2. Non-traumatic conditions:
 - a. Manipulative correction of congenital problems like CTEV.
 - b. Biopsies.
 - c. Excision of benign lesions.
 - d. Tendon lengthening.

IInd YEAR:

1. Trauma
 - a. Tension band wiring of fracture patella, fracture olecranon, etc.
 - b. DCP of forearm bones, tibia, etc.
 - c. DHS.
2. Non-traumatic conditions:
 - a. Carpal tunnel release.
 - b. Bone grafting.
 - c. Soft tissue release under supervision.

IIIrd YEAR:

1. Trauma
 - a. Hemi replacement arthroplasty of femur.
 - b. Dynamic condylar screw fixation.
 - c. Interlocking nailing of long bone fractures.
2. Non-traumatic conditions
 - a. Osteotomies.
 - b. Soft tissue release.
 - c. Tendon transfers.
 - d. Basic arthroscopy (diagnostic).

4. Teaching Learning Activities:

Participation in departmental activities

1. Clinical rounds: bedside clinical discussion, treatment modalities, record maintenance, discussion of alternate methods of management, PG notes, etc.
2. Journal review meeting: Review of recent journals and presentation of the same in the departmental meetings. Should include indexed international and national journals. At least four presentations should be made by each candidate in each year of the course.
3. Seminars on musculoskeletal trauma and diseases in orthopaedics. arthroplasty, spinal instrumentation and recent advances in orthopaedics. At

least 4 seminars per year by each MS candidate.

4. Should attend CPCs.
5. Interdepartmental meetings: ortho-radiology and ortho-pathology meetings should be attended by PGs.
6. Preparation and presentation of dissertation work – should present to the dept the review of literature in the first year and whole work by the second year to the dept.
7. Should have attended at least one National CME during the course
8. Should have presented at least one paper in any of the Orthopedic conferences during the course.

5. Rotation and posting in other depts. Basic sciences

Anatomy – one hour every week in anatomy dissection hall for 6 months in the first year.

Applied subjects – posting in second year

- i. Anaesthesia for 2 weeks
- ii. Radiology including CT/MRI for 2 weeks

Allied subjects

- i) Posting in artificial limb center, physiotherapy, occupational therapy & physical medicine and rehabilitation (PMR) for 1 week each.
- ii) Postings in Plastic surgery & Neurosurgery for 2 weeks each.

Training in teaching skills

Bedside clinic for undergraduates for 20 hours.

Bedside clinic for first year PG by third year PG for 10 hours.

6. Dissertation

Every candidates pursuing MS degree course is required to carry out work on a selected research project under the guidance of a recognized post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, comparison of results and drawing conclusions.

Every candidate shall submit to the Registrar (Academic) of the Deemed to be University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the course, on or before the dates notified by the Deemed to be University. The synopsis shall be sent through the proper channel.

Such synopsis will be reviewed and the dissertation topic will be registered by the Deemed to be University. No change in the dissertation topic or guide shall be made without prior approval of the Deemed to be University.

The dissertation should be written under the following headings:

1. Introduction
2. Aims or objectives of study
3. Review of literature
4. Material and methods
5. Results
6. Discussion

7. Conclusion
8. Summary
9. References
10. Tables
11. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexures. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

Four copies of dissertation thus prepared shall be submitted to the Registrar (Evaluation), six months before final examination, on or before the dates notified by the Deemed to be University.

The dissertation shall be valued by examiners appointed by the Deemed to be University. Approval of dissertation work is an essential precondition for a candidate to appear in the Deemed to be University examination.

Change of guide: In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the Deemed to be University.

Dissertation Review: Post Graduate shall present his dissertation work every 6 months with logbook during review meeting of the department.

7. Orientation programmes:

- a. Use of library
 - use of periodicals.
 - use of electronic library.
 - use of internet.
- b. Laboratory procedures – FNAC, bone marrow aspiration.
- c. National programmes – attending postgraduate teaching programs advised.
- d. Regulations – medical ethics.
- e. Research methodology.

8. Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in chapter IV.

The learning out comes to be assessed should included: (1) Personal Attitudes (2) Acquisition of Knowledge, (3) Clinical and operative skills, (4) Teaching skills and (5) Dissertation.

1. Personal Attitudes. The essential items are :

- a. Caring attitudes.
- b. Initiative.
- c. Organizational ability.
- d. Potential to cope with stressful situations and undertake responsibility.
- e. Trust worthiness and reliability.
- f. To understand and communicate intelligibly with patients and others.
- g. To behave in a manner which establishes professional relationships

- with patients and colleagues.
- h. Ability to work in team.
- i. A critical enquiring approach to the acquisition of knowledge. The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

2. Acquisition of knowledge: The methods used comprise of 'Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The log book should periodically be validated by the supervisor. Some of the activities are listed. The list is not complete. Institutions may include additional activities, if so desired.

- a. **Journal Review Meeting (Journal Club):** Journal shall be conducted weekly. The ability to do literature research, in depth study, presentation skills, and use of audio – visual aids are to be assessed during the Journal club presentation. The assessment is made by faculty members and peers attending the meeting using a checklist (see model checklist – I, in chapter IV)
- b. **Seminars / Symposia:** Seminar / Symposia shall be conducted weekly. The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio – visual aids are to be assessed using a checklist (see model checklist-II, chapter IV)
- c. **Clinico-Pathological conferences:** ClinicoPathological conference shall be conducted periodically (minimum three in a year). This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.
- d. **Surgical Audit:** Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

3. Clinical Operative skills

- a. **Day to Day work:** Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see model checklist III, chapter IV).
- b. **Clinical meetings:** Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see model checklist IV, chapter IV).
- c. **Clinical and Operative skills:** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book. (Table No.3, chapter IV)

4. Teaching skills: Candidates should be encouraged to teach undergraduate-medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from

feedback from the undergraduate students (See model checklist V, chapter IV)

5. Dissertation in the Department: Periodic presentations are to be made in the department. Initially the topic selected is to be presented before submission to the Deemed to be University for registration, again before finalization for critical evaluation and another before final submission of the completed work (See model checklist VI & VII, chapter IV)

6. Periodic tests: The departments may conduct three tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, clinicals and viva voce.

7. Work diary / Log Book – Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

8. Records: records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the Deemed to be University or MCI.

9. Log book: The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate.

Format for the log book for the different activities is given in Tables 1, 2 and 3 of chapter IV. Copies may be made and used by the institutions.

10. Procedure for defaulters: Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

11. Scheme of examination

A. Theory

There shall be four question papers, each of three hours duration. Each paper shall consist of two long essay questions, each question carrying 20 marks and 3 short essay questions, carrying 10 marks each and 6 short answers questions carrying 5 marks each. Total marks for each paper will be 100.

Details of distribution of topics for each paper will be as follows:

Paper I	-	Basic and clinical sciences as applied to orthopaedics
Paper II	-	Traumatic injuries of Musculo-skeletal system
Paper III	-	Non-Traumatic disorders of Musculo-skeletal system
Paper IV	-	.Recent advances related to orthopaedics

Questions on **recent advances** may be asked in any or all the papers.

B. Clinical

200 Marks

There shall be one long case and three short cases to be examined and presented

by each candidate.

Long case	case 1	marks 80
Short cases	cases 3	marks each 40
Total		marks 200

C. Viva Voce:

100 marks

1. Viva-Voce Examination : (100 Marks)

All examiners will conduct viva-voce individually on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. The components of assessments are as follows:

Instruments & implants&surgical Specimens	25 marks
Orthotics & Prosthetics& Osteology	25 marks
Pedagogy- Surgical Skills	25 marks
X-rays	25 marks
Total	100 marks

It includes discussion on dissertation also.

D. Distribution of Marks:

Maximum marks for	Theory	Practical	Viva	Grand Total
M S in Orthopaedics	400	200	100	700

12. Recommended books and Journals:

1. Campbell's Operative Orthopaedics.
2. Fractures in adults & Children, Charles A. Roackwood Jr., David P. Green, Robert E. Bucholz, and James D Heckman.
3. Orthopaedic, 5th edition, edited by Samuel Turek.
4. Mercer's Orthopaedic surgery 9th edition Robert B Duthie & George Bentley.
5. J.N. Wilson Watson – Jones Fracture and Joint injuries.
6. Tachdain – Paediatric Orthopaedics.
7. Enneking – bone tumors.
8. Tuli – Tuberculosis of Skeletal system.
9. Thakur – Elements of fracture fixation.
10. Das – Clinical methods in Surgery.
11. Tanna D.D – Interlocking nailing.
12. Green's Operative hand surgery; 6th Edition
13. Muller – AO/ASIF Instruments and Implants.
14. Text book of orthopaedics and trauma by G.S.Kulkarni and Sushruth Babular- 4 volumes 3rd Edition
15. The closed treatment of common fracture by John Charley
16. Traction and orthopaedic appliances by John D.M. Stewart and Jeffery Hallett 2nd Edition

Journals:

1. Journal of Bone and Joint Surgery.
2. Clinical Orthopaedics and related research.
3. Orthopaedic clinics of North America.
4. TRAUMA.
5. Indian Journal of Orthopaedics.

DIPLOMA IN ORTHOPAEDICS

1. Goals&Objectives:

At the end of the course, the candidate should be:

1. Aware of the current concepts in quality care in orthopaedics and musculo-skeletal trauma and also of diagnosis, therapeutic, medical or surgical management of orthopedic problems.
2. Able to offer initial primary management of acute orthopedic and trauma emergencies.
3. Aware of the limitations and refer readily to major centers for more qualified care of cases which warrant such referral.
4. Aware of research methodology and be able to conduct research and publish the work done.
5. Able to effectively communicate with patients, their family members, people and professional colleagues.
6. Able to exercise empathy and a caring attitude and maintain high ethical standards.
7. Continue to evince keen interest in continuing education irrespective of whether he/she is in a teaching institution or in clinical practice.

2. Course Contents:

Essential theoretical knowledge.

I. Basic Sciences

1. Anatomy
 - a. Musculo skeletal anatomy: anatomy of the shoulder girdle, pelvic girdle, upper & lower limbs, anatomy of the spine and chest.
 - b. Embryology and development of musculo skeletal system.
 - c. Histology.
2. Physiology
 - a. Physiology of musculo skeletal system.
 - b. Metabolism of bone, hormonal influence on musculo skeletal system & other related orthopaedic physiology.
3. Pathology
 - a. General pathology.
 - b. Tumour pathology in musculo skeletal system.
 - c. Other orthopaedic pathology.
4. Biochemistry
 - a. General biochemistry.
 - b. Biochemical aspects related to orthopaedic diseases.

II. Clinical Orthopaedics

2. General orthopaedics
 - a. General principles of healing of injury & musculoskeletal trauma.
 - b. Systemic management of the injured & body response to trauma.
 - c. General principles of management of Neurovascular injury.
 - d. Management of poly trauma.
 - e. Consequences of musculoskeletal trauma & rehabilitation of the injured.

- f. General principles of management musculoskeletal trauma - surgical and conservative.
- g. Compound injuries – management and stabilization procedures in orthopaedics.
- h. General principles of management musculoskeletal trauma in children.

III. Orthopaedic Traumatology

- a. Musculoskeletal trauma in shoulder girdle and upper limb.
- b. Musculoskeletal trauma in pelvic girdle and lower limb.
- c. Injuries of the spine and chest and management of paraplegia.
- d. Pathological fractures and management.

IV. Diseases in Orthopaedics

- a. Congenital malformations.
- b. Metabolic, developmental & hormonal disorders in musculoskeletal system.
- c. Epiphyseal and neuromuscular affections in children.
- d. Infective diseases in musculo-skeletal system including & leprosy.
- e. Arthritis and rheumatic disease.
- f. Tumours of musculoskeletal system.
- g. Amputations.
- h. Prosthetics and orthotics.
- i. Physical medicine.

V. Sports Medicine Including Arthroscopy

VI. Essential diagnostic skills - Instrumentation

1. Radiology
 - a. General musculoskeletal radiology – plain x-ray.
 - b. MRI.
 - c. CT scan.
 - d. Scintigraphy & bone scan.
 - e. Stress radiography.
 - f. Ultrasonography.
2. Interventional radiography.
 - a. Sinogram.
 - b. CT guided biopsy / Ultrasound guided procedures
3. Arthroscopy.
4. Biopsy:
 - a. Trocar.
 - b. FNAC.

VII. Surgical Skills

1. **Anaesthesia:** Regional anesthesia.
 - a. Wrist block & digital block.
 - b. Femoral block.
 - c. Ankle block.
 - d. Brachial block & inter scalene block.

- e. Spinal anaesthesia.
- f. IVRA.

VIII. Surgical Procedures

1. Pelvic girdle & lower limb

- a. Fracture fixation.
- b. Osteotomies and arthrodesis in lower limb.
- c. HRA in hip joint.
- d. Soft tissue surgeries.
- e. Foot and ankle surgery.
- f. Management of nonunion of fractures with Illizarov.
- g. Deformity correction with Illizarov.
- h. Ligamentous reconstruction of knee joint.
- i. Plastic reconstruction and other reconstructive procedures in musculoskeletal trauma.
- j. Arthroscopic surgeries.
- k. Total hip arthroplasty.
- l. Total knee arthroplasty.
- m. Total ankle arthroplasty.
- n. Stabilization of pelvic fracture by external fixator.
- o. Acetabular fracture fixation and pelvic osteotomies.

2. Shoulder Girdle & Upper Limb

- a. Fracture fixation, osteotomies and arthrodesis in upper limb.
- b. Reconstructive surgeries in shoulder joint
- c. Soft tissue surgeries.
- d. Elbow and hand surgery.
- e. Management of nonunion of fractures with Illizarov.
- f. Deformity correction with Illizarov.
- g. Plastic reconstruction and other reconstructive procedures in musculoskeletal tumours.
- h. Arthroscopic surgeries.
- i. Total shoulder arthroplasty.
- j. Total elbow arthroplasty.

3. Spine Surgeries

- a. Posterior spinal fusion.
- b. Disc surgery & decompressive procedures in spine.
- c. Instrumentation in spine.
- d. Deformity correction in spine.
- e. Surgical procedures in TB Spine.

4. Surgical Procedures - Emergency

- a. Primary wound debridement & external fixator application.
- b. Emergency amputations.
- c. Primary internal fixation for compound fractures.
- d. Neurovascular repair and reconstruction.

3. Graded responsibility in care of patients and operative work

Ist Year:

- 1. Trauma care:
 - a. Closed reductions of fractures, Plaster application.
 - b. Debridement of open fractures, external fixations.
 - c. Internal fixations of minor fractures with K wire.
- 2. Non-traumatic conditions:
 - a. Manipulative correction of congenital problems like CTEV.

- b. Biopsies.
- c. Excision of benign lesions.
- d. Tendon lengthening.

IInd YEAR:

- 1. Trauma
 - a. Tension band wiring of fracture patella, fracture olecranon, etc.
 - b. DCP of forearm bones, tibia, etc.
 - c. DHS.
 - d. Tension Band Winigng(TBW)

- 2. Non-traumatic conditions:
 - e. Carpal tunnel release.
 - f. Bone grafting.

Soft tissue release under supervision.

4. Teaching Learning Activities:

Participation in departmental activities

- 1. Clinical rounds: bedside clinical discussion, treatment modalities, record maintenance, discussion of alternate methods of management, PG notes, etc.
- 2. Journal review meeting: Review of recent journals and presentation of the same in the departmental meetings. Should include indexed international and national journals. At least four presentations should be made by each candidate in each year of the course.
- 3. Seminars on musculoskeletal trauma and diseases in orthopaedics. arthroplasty, spinal instrumentation and recent advances in orthopaedics. At least 4 seminars per year by each MS candidate.
- 4. Should attend CPCs.
- 5. Interdepartmental meetings: ortho-radiology and ortho-pathology meetings should be attended by PGs.

5. Rotation and posting in other departments

Basic Sciences

Applied subjects:

- 1. Anatomy – one hour every week in anatomy dissection hall for 6 months in the first year. – posting in second year
- 2. Radiology including CT/MRI for 2 weeks

Allied subjects:

Posting in artificial limb centre, physiotherapy, occupational therapy & physical medicine and rehabilitation (PMR) for 1 week each

6. Training in teaching skills

Bedside clinic for undergraduates for 10 hours.

7. Orientation programmes:

- a. Use of library
 - Use of periodicals.
 - Use of electronic library.
 - Use of internet.

- b. Laboratory procedures – FNAC, bone marrow aspiration.
- c. National programmes – attending postgraduate teaching programs advised.
- d. Regulations – medical ethics.
- e. Research methodology.

8. Monitoring Learning Progress:

1. It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in chapter IV.

The learning out comes to be assessed should included: (1) Personal Attitudes (2) Acquisition of Knowledge, (3) Clinical and operative skills.

2. Personal Attitudes. The essential items are :

- a. Caring attitudes.
- b. Initiative.
- c. Organizational ability.
- d. Potential to cope with stressful situations and undertake responsibility.
- e. Trust worthiness and reliability.
- f. To understand and communicate intelligibly with patients and others.
- g. To behave in a manner which establishes professional relationships with patients and colleagues.
- h. Ability to work in team.
- i. A critical enquiring approach to the acquisition of knowledge.

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

3. Acquisition of knowledge: The methods used comprise of 'Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The log book should periodically be validated by the supervisor. Some of the activities are listed. The list is not complete. Institutions may include additional activities, if so desired.

- a. **Journal Review Meeting** (Journal Club): Journal shall be conducted weekly. The ability to do literature research, in depth study, presentation skills, and use of audio – visual aids are to be assessed during the Journal club presentation. The assessment is made by faculty members and peers attending the meeting using a checklist (see model checklist – I, in chapter IV)
- b. **Seminars / Symposia:** Seminar / Symposia shall be conducted weekly. The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio – visual aids are to be assessed using a checklist (see model checklist-II, chapter IV)

- c. **Clinico-Pathological conferences:** ClinicoPathological conference shall be conducted periodically. This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.
- e. **Surgical Audit:** Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

9. Clinical Operative skills

- a. **Day to Day work:** Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see model checklist III, chapter IV).
- b. **Clinical meetings:** Candidates should periodically present cases to hispeers and faculty members. This should be assessed using a check list (see model checklist IV, chapter IV).
- c. **Clinical and Operative skills:** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book. (Table No.3, chapter IV)

Periodic tests: The departments may conduct two tests first at the end of 1st year and the other may be held three months before the final examination. The tests may include written papers, practicals / clinicals and viva voce.

Work diary / Log Book – Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical, if any conducted by the candidate.

Records: records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the Deemed to be University or MCI.

Log book

The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate.

Format for the log book for the different activities is given in Tables 1, 2 and 3 of chapter IV. Copies may be made and used by the institutions.

Procedure for defaulters: Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may

recommended that defaulting candidate by withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

10. Scheme of Examination

A. Theory

There shall be three question papers, each of three hours duration. Each paper shall consist of two long essay questions, each question carrying 20 marks and 3 short essay questions, carrying 10 marks each and 6 short answers questions carrying 5 marks each.

Total marks for each paper will be 100.

Details of distribution of topics for each paper will be as follows:

Paper I	Basic & clinical sciences in orthopaedics
Paper II	Orthopedic traumatology
Paper III	Systemic and regional orthopaedics

B. Clinical - 150 Marks

There shall be one long case and two short cases to be examined and presented by each candidate.

Long case	case 1	marks 70
Short cases	cases 2	marks each 40
Total		marks 150

D. Viva Voce: 50 marks

1. Viva-Voce Examination : (50 Marks)

All examiners will conduct viva-voce individually on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. The components of assessments are as follows:

Instruments & implants&surgical Specimens	12.5 marks
Orthotics & Prosthetics& Osteology	12.5 marks
Pedagogy- Surgical Skills	12.5 marks
X-rays	12.5 marks
Total	50 marks

D. Distribution of Marks:

Maximum marks for	Theory	Clinicals	Viva	Grand Total
Diploma in Orthopaedics	300	150	50	500

11. Recommended books and Journals:

1. Campbell's Operative Orthopaedics.
2. Fractures in adults & Children, Charles A. Roackwood Jr., David P. Green, Robert E. Bucholz, and James D Heckman.
3. Orthopaedic, 5th edition, edited by Samuel Turek.

4. Mercer's Orthopaedic surgery 9th edition Robert B Duthie & George Bentley.
5. J.N. Wilson Watson – Jones Fracture and Joint injuries.
6. Tachdian – Paediatric Orthopaedics.
7. Enneking – bone tumors.
8. Tuli – Tuberculosis of Skeletal system.
9. Thakur – Elements of fracture fixation.
10. Das – Clinical methods in Surgery.
11. Tanna D.D – Interlocking nailing.
12. Text book of orthopaedics and trauma by G.S. Kulkarni and Sushruth Babular- 4 volumes 3rd Edition
13. Muller – AO/ASIF Instruments and Implants.

Journals:

1. Journal of Bone and Joint Surgery.
2. Clinical Orthopaedics and related research.
3. Orthopaedic clinics of North America
4. TRAUMA.
5. Indian Journal of Orthopaedics.



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