



BLDE UNIVERSITY

PG CURRICULUM 2012-13 MS Orthopaedics

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BLDE UNIVERSITY

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The Constituent College

SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE

Smt. Bangaramma Sajjan Campus, Sholapur Road, Bijapur - 586103, Karnataka, India.

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B.L.D.E. UNIVERSITY

(Declared vide notification No. F.9-37/2007-U 3 (A) Dated. 29-2-2008 of the MHRD, Government of India under Section 3 of the UGC Act,1956)
The Constituent College

SHRI. B. M. PATIL MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTRE

BLDEU/REG/PG/2012-13/845

September 20, 2012

NOTIFICATION

Subject: Revised Curriculum for the Post Graduate Degree and Diploma Courses – 2012

Reference:

1. Medical Council of India Regulation on Graduate Medical Education, 1997 and subsequent amendments of the same from time-to-time.
2. Minutes of the meeting of the Academic Council of the University held on April 11, 2012
3. Minutes of the meeting of the BOM of the University held on May 23, 2012.

The Board of Management of University is pleased to approve the Curriculum for Post Graduate Degree and Diploma Courses at its meeting held on May 23, 2012.

The revised curriculum shall be effective, from the Academic Session 2012-13 onwards, for Post Graduate Degree and Diploma Course in the Constituent College of the University viz Shri B. M. Patil Medical College, Hospital and Research Centre.

To,
The Dean, Faculty of Medicine and Principal
Shri B. M. Patil Medical College,
Hospital and Research Centre,
BIJAPUR


REGISTRAR
REGISTRAR.
BLDE University, Bijapur.

Copy to:

1. The Secretary, UGC, New Delhi
2. The Controller of Examinations
3. Prof. & HODs of Pre, Para and Clinical Departments.
4. PS to Hon'ble President
5. PS to Hon'ble Vice Chancellor
6. Office Copy

Smt. Bangaramma Sajjan Campus, Sholapur Road, Bijapur – 586103, Karnataka, India.

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Vision and Mission

- *Committed to provide globally competitive quality medical education.*
- *To provide the best health care facilities in this backward region, in particular, to socially disadvantaged sections of the society.*
- *Constantly striving to become a reputed research University with world-class infrastructure, latest tech-tools for teaching/research and adopting global best practices.*

Section - I

Goals and General Objectives of Postgraduate Medical Education Program

Goal

The goal of postgraduate medical education shall be to produce a competent specialist and / or a medical teacher:

- (i) 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;
- (ii) Who shall have mastered most of the competencies, retraining to the specialty, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- (iii) Who shall be aware of the contemporary advances and developments in the discipline concerned;
- (iv) Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology; and
- (v) 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:

- (i) Recognize the importance of the concerned specialty in the context of the health need of the community and the national priorities in the health sector.
- (ii) Practice the specialty concerned ethically and in step with the principles of primary health care.
- (iii) Demonstrate sufficient understanding of the basic sciences relevant to the concerned specialty.
- (iv) 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 promotive measures/strategies.
- (v) Diagnose and manage majority of the conditions in the specialty concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
- (vi) Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the specialty.
- (vii) Demonstrate skills in documentation of individual case details as well as morbidity and mortality data relevant to the assigned situation.
- (viii) Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behavior in accordance with the societal norms and expectations.
- (ix) Play the assigned role in the implementation of national health programs, effectively and responsibly.
- (x) Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
- (xi) Develop skills as a self-directed learner; recognize continuing educational needs; select and use appropriate learning resources.
- (xii) Demonstrate competence in basic concept of research methodology and epidemiology, and be able to critically analyse relevant published research literature.
- (xiii) Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
- (xiv) Function as an effective leader of a 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 program so that he or she can direct the efforts towards the attainment of these competencies.

Components of the PG Curriculum

The major components of the PG curriculum shall be:

- Theoretical knowledge

- Practical/clinical Skills
- Training in writing thesis/research articles
- Attitudes, including communication.
- Training in research methodology, medical ethics & medicolegal aspects

Source: Medical Council of India, Regulations on Postgraduate Medical Education, 2000. [amended upto January 2010]

Eligibility for Admission:

Eligibility requirements for Post Graduate Diploma and Degree Courses are :-

1. The candidates seeking admission to these courses should have passed MBBS from the college recognized by Medical Council of India.

Eligibility requirements for Post graduate degree in superspeciality courses, M.Ch./D.M are:

The candidate seeking admission to these courses should have passed MS/MD from the college recognized by Medical Council of India.

2. As per the requisitions of statutory bodies, as laid out in post graduate regulations 2000 of Medical Council of India and its amendments thereof, the minimum percentage of marks in the entrance test conducted by the University for eligibility for admission to Post Graduate courses in broad specialties and super specialties shall be 50 percent for candidates belonging to General category and 40 percent for the candidates belonging to Scheduled Caste, Scheduled Tribes and Other Backward Classes. Eligibility for persons with locomotor disability of lower limbs category will be 45 percent.

Eligibility for Foreign / PIO / NRI students will be based on qualifying examination marks.

The MCI norms to qualify for Admissions

Candidates seeking admission to these Post Graduate Degree courses should have passed M.B.B.S. recognised by Medical Council of India or equivalent qualification and should have obtained permanent Registration from the Medical Council of India or any of the State/ Medical council or candidate should register the same within one month from the date of admission, failing which the admission of the candidate shall be cancelled. Provided that in the case of a foreign national, the MCI may on the payment of prescribed fee for the registration, grant temporary registration for the duration of post graduate training restricted to the medical college/ institute to which the applicant is admitted for the time being exclusively for post graduate studies; provided further, that temporary registration to such foreign national shall be subjected to the condition that such person is duly registered with appropriate registering authority in his /her country wherefrom he has obtained his basic medical qualification, and is duly recognized by the corresponding Medical Council or concerned authority..

If the candidate fails to fulfill the relevant eligibility requirements as mentioned above he/she will not be considered eligible for admission for Medical Postgraduate Degree and Diploma Courses even if he/she is placed in the merit list of BLDEU-PGET/BLDEU-SUPERSPECIALTY ET.

Obtaining Eligibility Certificate by the University before making Admission

Candidate shall not be admitted for any postgraduate degree/diploma course unless he/she has obtained and produced the eligibility certificate used by the University. The candidate has to make an application to the University with the following documents along with the prescribed fee:

1. MBBS pass/degree certificate issued by the University.
2. Marks cards of all the university examinations passed MBBS course.
3. Attempt Certificate issued by the Principal
4. Certificate regarding the recognition of the Medical College by the Medical Council of India.
5. Completion of internship certificate.

6. In case internship was done in a non-teaching hospital, a certificate from the Medical Council of India that the hospital has been recognized for internship.
 7. Registration by any State Medical council and
 8. Proof of SC/ST or OBC or physically handicapped status, as the case may be.
- In addition to the above mentioned documents, candidate applying for admission to superspecialty courses has to produce degree/pass certificate of MD/MS degree with prescribed fee.

Intake of Students

The intake of students to each course shall be in accordance with the ordinance in this behalf.

Course Duration

a. M.D. / M.S. Degree Courses:

The course of study shall be for a period of 3 years consisting of 6 terms including examinations. For Candidates possessing recognized two year Postgraduate Diploma in the same subject the duration of the course shall be two years including examinations. (MCI PG REG 2000 10:1)

b.D.M/M Ch Degree Courses;(MCI PG REG 2000,10:2)

The duration of these courses shall be for a period of 3 years including examinations.

c.Diploma Courses:

The course of study shall be for a period of 2 years consisting of 4 terms including examinations(MCI PG REG 2000,10.3).

Training Method

The postgraduate training for degree/diploma shall be of residency pattern. The post graduate shall be trained 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 should be required to participate in the teaching and training program 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.

Attendance, Progress and Conduct

A candidate pursuing degree/diploma course should work in the concerned department of the institution for the full period as a full time student. No candidate is permitted to run a clinic/laboratory/nursing home 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.This shall include assignments,assessed full time responsibilities and participation in all facets of educational process. 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. Leave benefits shall be as per university rules.

A post graduate student pursuing degree course in broad specialities, MD,MS and superspeciality courses DM,M.Ch would be required to present one poster presentation,read one paper in 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/her to be eligible to appear at the university degree examinations.(MCI,PG 2000,13.9)

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

Monitoring Progress of Studies

The learning process of students should be monitored through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment done by using checklists that assess various aspects.

The learning outcomes to be assessed include:

- Personal Attitudes,
- Acquisition of Knowledge,
- Clinical and operative skills,
- Teaching skills.

Personal Attitudes:

The essential items are:

- Caring attitudes
- Initiative
- Organizational ability
- Potential to cope with stressful situations and undertake responsibility
- Trustworthiness and reliability
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues
- Ability to work in team
- 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.

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.

Lectures: Lectures are to be kept to a minimum. They may, however, be employed for teaching certain topics. Lectures may be didactic or integrated.

a) Didactic Lectures: Recommended for selected common topics for post graduate students of all specialties. Few topics are suggested here.

- Bio-statistics
- Use of library,
- Journal review
- Use of computers,
- Appropriate use of AV aids
- Research Methods,
- Search of literature,
- Rational drug therapy
- Medical code of Conduct and Medical Ethics
- National Health and Disease Control Programmes
- Communication skills etc.

These topics may preferably be taken up in the first few weeks of the 1st year commonly for all new postgraduates

b) Integrated teaching : These are recommended to be taken by multidisciplinary teams for selected topics, eg. Jaundice, Diabetes mellitus, thyroid diseases etc.

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

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.

Clinico-Pathological conferences:

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.

Medical Audit: Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

Clinical Skills: 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

Clinical Meetings:

Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list

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.

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

Work diary / Log Book:

Every candidate shall maintain a work diary and record his/her participation in the training programs 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. The work diary shall be scrutinized by concerned teachers periodically and certified, by the Head of Department and Head of the Institution, and presented during university practical / Clinical examination.

Periodic tests:

In case of degree courses of three years duration (MD/MS, DM, M.Ch), the concerned departments 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. The tests may include written papers, practical / clinical and viva voce.

One of these practical/clinical tests should be conducted by OSPE(objective structured practical examination or OSCE(objective structured clinical examination) method.

.Records and marks obtained in such tests will be maintained by the Head of Department and sent to the University, when called for,

In case of diploma courses of two years duration, the concerned departments may conduct two tests, one of them be 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.

One of these practical/clinical tests should be conducted by OSPE or OSCE method.

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

Procedure for defaulter:

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.

Dissertation: Every candidate pursuing MD/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 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 Registrar (Academic) of the 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 University. The synopsis shall be sent through the proper channel.

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

The dissertation shall 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. Annexure

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 University.

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

Guide:

The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work is as per Medical Council of India Minimum Qualifications for Teachers in Medical Institutions Regulations, 1998. Teachers in a medical college/institution having a total of eight years teaching experience out of which at least five years teaching experience as Lecturer or Assistant Professor gained after obtaining post graduate degree shall be recognized as post graduate teachers.

A Co-guide may be included provided the work requires substantial contribution from a sister department or from another medical institution recognized for teaching/training by this University / Medical Council of India. The co-guide shall be a recognized post graduate teacher of BLDE University

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 university.

Schedule of Examination:

The examination for M.D. /M.S and DM/M.Ch 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 (four academic terms).

The 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.

Scheme of Examination

M.D. /M.S. Degree

M.D. / M.S. Degree examinations in any subject shall consist of dissertation, written papers (Theory), Practical/Clinical and Viva Voce.

Dissertation:

Every candidate shall carryout work and submit a Dissertation as indicated above. Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

Written Examination (Theory):

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 should also be asked.

Practical / Clinical Examination:

In case of practical examination, it should be aimed at assessing competence and skills of techniques and procedures as well as testing students ability to make relevant and valid observations, interpretations and inference of laboratory or experimental work relating to his/her subject.

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

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

Viva Voce:

Examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills.

The total marks shall be 100:

- 80 Marks, for examination of all components of syllabus
- 20 Marks for Pedagogy

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 University Examination: A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical/ clinical and(3)viva voce examination. The candidate should pass independently in practical/clinical examination and Viva Voce vide MCI pg 2000 reg no 14(4)(Ciii)

A candidate securing less than 50% of marks as described above 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 distinction: A successful candidate passing the University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate of marks is 75 percent and above.

Distinction will not be awarded for candidates passing the examination in more than one attempt.

D.M/M.Ch Degree

DM/M.Ch Degree examinations in any subject shall consist of written theory papers(theory),practical/clinical and Viva voce.

Written Examination (Theory):

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 should also be asked.

Practical / Clinical Examination:

In case of practical examination, it should be aimed at assessing competence and skills of techniques and procedures as well as testing students ability to make relevant and valid observations, interpretations and inference of laboratory or experimental work relating to his/her subject.

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

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

Viva Voce:

Examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills.

The total marks shall be 100:

- 80 Marks, for examination of all components of syllabus
- 20 Marks for Pedagogy

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 University Examination: A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical including clinical and (3) viva voce examination. The candidate should pass independently in practical/clinical examination vide MCI pg 2000 reg no 144-c(iii).

Declaration of distinction: A successful candidate passing the University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate of marks is 75 percent and above.

A candidate securing less than 50% of marks as described above 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.

Distinction will not be awarded for candidates passing the examination in more than one attempt.

Diploma Examination:

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 should also be asked.

Practical / Clinical Examination:

In case of practical examination it should 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 should aim at examining clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate should 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 should aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 50.

Criteria for declaring as pass in University Examination: A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical / clinical and viva voce examination.

A candidate securing less than 50% of marks as described above 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 distinction: A successful candidate passing the University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate of marks is 75% and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.

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.

Number of Candidates per day:

The maximum number of candidates for practical / clinical and viva-voce examination shall be as under:

MD / MS Courses: Maximum of 6 per day

Diploma Courses: Maximum of 6 per day

DM/M.Ch Courses: Maximum of 3 per day

SECTION - II

MS ORTHOPAEDICS

Goal:

The postgraduate course M.S. (Orthopedics) should enable a medical graduate to become a competent specialist, acquire knowledge and skills in educational technology for teaching medical, dental and health sciences and conduct research in bio-medical science.

Objectives:

- i) 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;
- ii) Who shall have mastered most of the competencies, , that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- iii) Who shall be aware of the contemporary advances and developments in orthopedics;
- iv) Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology; and
- v) Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.
- vi) Continue to evince keen interest in continuing surgical education irrespective of whether he is in a teaching institution or is a practicing surgeon.

Specific Learning Objectives:

The specific learning objectives of postgraduate training course in Orthopedics would be to train a MBBS doctor who will:

- Practice orthopedics efficiently and effectively, backed by scientific knowledge and skill base.
- Be a motivated 'teacher' – defined as an orthopedic surgeon keen to share his knowledge and skills with a colleague or a junior or any learner.

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

1. Aware of the current concepts in quality care in orthopaedics and musculo-skeletal orthopaedic problems,
2. Able to offer initial primary management of acute orthopaedic 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.

The objectives may be considered under the following headings.

- A. Knowledge
- B. Skills
- C. Human values, ethical practice and communication abilities

D. Research activities.

At the end of the training the candidate must be able to:

A. Knowledge:

- Demonstrate understanding of basic sciences relevant to orthopaedics.
- Describe the management of common and uncommon orthopaedic conditions of all ages, requiring operative interventions with a basic knowledge of the aetiology, pathophysiology and the surgical treatment of the conditions.
- Describe the underlying theoretical background of mechanism of fractures and their management.
- Describe the theory of the underlying aetiology, mechanism and management of the conditions requiring resuscitation.
- Demonstrate understanding of the theoretical basis of polytrauma and the science of resuscitation.
- Recognize the conditions that may be outside the area of his competence and refer them to an appropriate specialist prior to anesthetizing them.
- Update himself/herself by self-study and by attending continuing medical education courses, conferences and seminars relevant to orthopaedics.
- Demonstrate understanding of medico-legal aspects of orthopaedics.
- Undertake audit, use information technology, tools and carry out research, both basic and clinical with the aim of publishing his work and presenting his work at various scientific fora.

B. Skills: Practical / Clinical

- Evaluation of patients by taking, proper clinical history, examining the patient, ordering relevant investigations and interpreting them to have additional information about the orthopaedic condition, and / or the associated medical condition.
- Perform common surgeries practiced in orthopaedics.
- To be able to guide the patients in proper rehabilitation.
- Provide Basic Life Support (BLS).
- Manage airway and perform ventilatory care of unconscious and polytrauma cases as a member of trauma team and critical care unit team.

C. Human values, ethical practice and communication abilities

- Adopt ethical principles in all aspects of orthopaedic practice. Professional honesty and integrity are to be fostered. orthopaedic care is to be delivered to all in need, irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain the various options available in the orthopaedic management,
- Provide leadership and get the, best out of his team in a congenial working atmosphere.
- Apply high moral and ethical standards while carrying out human or animal research.
- Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed.
- Respect patient's rights and privileges including patients right to information and right to seek a second opinion.

D. Research activities

Student will be encouraged to have research activities other than dissertation and publish at least one article during the course of the study.

Course contents

Essential theoretical knowledge

I. BASIC SCIENCES

Anatomy

- i) Musculo skeletal anatomy – Anatomy of the shoulder girdle, pelvic girdle, upper & lower limbs anatomy of the spine.
- ii) Embryology and development of musculo skeletal system.
- iii) Histology.

Physiology

- i) Physiology of musculo skeletal system
- ii) Metabolism of bone, hormonal influence on musculo skeletal system & other related orthopaedic physiology

Pathology

- i) General pathology
- ii) Tumour pathology in musculo skeletal system
- iii) Other orthopaedic pathology.

Biochemistry

- i) General Biochemistry.
- ii) Biochemical aspects related to orthopaedic diseases

II. CLINICAL ORTHOPAEDICS

General Orthopaedics

- i) General principal of healing of injury & musculoskeletal trauma.
- ii) Systemic management of the injured & body response to trauma.
- iii) Head injury & fascio maxillary injury.
- iv) General principal of management of Neurovascular injury.
- v) Management of poly trauma.
- vi) Consequences of musculoskeletal trauma & rehabilitation of the injured.
- vii) General principles of management musculoskeletal trauma – surgical and conservative.
- viii) Compound injuries – management and stabilization procedures in orthopaedics.
- ix) General principles of management musculo skeletal trauma – in children.

III. ORTHOPAEDIC TRAUMATOLOGY

- i) Musculoskeletal trauma in shoulder girdle and upper limb.
- ii) Musculoskeletal trauma in pelvic girdle and lower limb.
- iii) Injuries of the spine and management of paraplegia.
- iv) Pathological fractures and management.

IV. DISEASES IN ORTHOPAEDICS

- i) Congenital malformations.
- ii) Metabolic, developmental & hormonal disorders in musculoskeletal system.

- iii) Epiphyseal and neuromuscular affections in children.
- iv) Infective Diseases in musculo-skeletal system including polio & Leprosy.
- v) Arthritis and Rheumatic disease.
- vi) Tumours of musculoskeletal system.
- vii) Amputations.
- viii) Prosthetics and orthotics.
- ix) Physical medicine.

V. SPORTS MEDICINE INCLUDING ARTHROSCOPY.

VI. ESSENTIAL DIAGNOSTIC SKILLS – INSTRUMENTATION

Radiology

- a) General musculoskeletal radiology – plain X-ray.
- b) MRI.
- c) CT Scan.
- d) Scintigraphy & Bone scan.
- e) Stress radiography.
- f) Ultrasonography.

Interventional Radiography

- a) Sinogram.
- b) Myelography
- c) Epidurogram
- d) CT Guided biopsy.
- e) Arthrogram

Arthroscopy

Biopsy

- a) Trocar
- b) FNAC

VII. ALLIED SURGICAL SKILLS

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

Pelvic girdle & lower limb

- a) Fracture fixation
- b) Osteotomies and Arthrodosis in lower limb.
- c) HRA in Hip joint

- d) Soft tissue surgeries.
- e) Foot and ankle surgery.
- f) Management of nonunion of fractures with Ilizarov technique.
- g) Deformity correction with Ilizarov technique.
- 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) Stabilisation of pelvic fracture by external fixator.
- o) Acetabular fracture fixation and pelvic osteotomies

IX. 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 Ilizarov technique
- f) Deformity correction with Ilizarov technique.
- g) Plastic reconstruction and other reconstructive procedures in musculoskeletal tumours
- h) Arthroscopic surgeries
- i) Total shoulder arthroplasty.
- j) Total Elbow arthroplasty.

X. 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.

XI. SURGICAL PROCEDURES – EMERGENCY

- a) Primary wound debridement & External fixator application.
- b) Emergency amputations.
- c) Primary internal fixation for compound fractures.

Graded responsibility in care of patients and operative work

1st YEAR

Orientation programme -

- a) Basic sciences related to orthopaedics. Theoretical knowledge of Anatomy & Physiology
- b) Special emphasis on clinical examination of patients, learning clinical methods, arriving at correct diagnosis.
- c) Choosing a topic for dissertation, submission of synopsis to the University, collection of literature, conduct pilot studies.

d) Use of library, periodicals, internet and electronic library.

Trauma care

Closed reductions of fractures, Plaster application,
Debridement of open fractures, External fixations
Internal fixations of minor fractures with K wire

Non-traumatic conditions:

Manipulative correction of congenital problems like CTEV
Biopsies
Excision of benign lesions
Tendon lengthening

2nd YEAR

Trauma

Tension band wiring of fracture patella, fracture olecranon, etc
DCP of forearm bones, tibia, etc
DHS

Non-traumatic conditions:

Carpal tunnel release
Bone grafting
Soft tissue release under supervision

1. Theoretical knowledge of allied subjects, subspecialties of orthopaedics.
2. Conference and Workshops: attending one state level and one national level conference/CME and presentation of a scientific paper.
3. Dissertation: Carrying out of the dissertation study work, periodic reviews, and interaction with guide. Organization of the data, writing the manuscript of dissertation at end of 2nd year.
4. The student should be actively involved in presentation of seminars, journal clubs, and case presentation/discussions.

3rd YEAR

Trauma

Hemi replacement arthroplasty of femur
Dynamic Condylar screw fixation
Interlocking nailing of long bone fractures

Non-traumatic conditions

Osteotomies
Soft tissue release
Tendon transfers
Basic arthroscopy (diagnostic)

1. The student should be well versed with basics, allied subjects and recent advances in the respective fields.
2. Orthopaedic Skills: At the end of the 3rd year the candidate should be able to make independent decisions as regards various orthopaedic conditions and be able to perform surgeries with reasonable competence.
3. Teaching Activities: Final year student should take lead in conducting seminars, journal clubs, case discussions, panel discussions with I and II year students. The third year

students should also involve in teaching undergraduate students specially bedside clinics.

4. **Dissertation:** The completed dissertation must be submitted to the University, 6 months before the notified date of examination.
The student must get expertise in the specialized procedures as noted in the course content table

Teaching Learning Activities

A candidate pursuing the course should work in the institution as a full time student. No candidate should be permitted to run a clinic/laboratory/nursing home while studying postgraduate course. Each year should be taken as a unit for the purpose of calculating attendance.

Every student shall attend teaching and learning activities during each year as prescribed by the department and not absent himself/herself from work without valid reasons.

A list of teaching and learning activities designed to facilitate students acquire essential knowledge and skills outlined, is given below.

A. Theoretical Teaching

1. **Lectures:** Lectures are to be kept to a minimum. They may, however, be employed for teaching certain topics. Lectures may be didactic or integrated.
 - a) **Didactic Lectures:** Recommended for selected common topics for postgraduate students of all specialities. Few topics are suggested as examples:
 - 1) Initial introductory lectures about the subject.
 - 2) Use of library
 - 3) Research Methods
 - 4) Communication Skills
 - 5) Medical Code of Conduct and Medical Ethics.
 - 6) National Health and Disease Control Programs.
 - 7) Bio-statistics etc.

These topics may preferably taken up in the first few weeks of the 1st year.

- b) **Integrated Lectures:** These are recommended to be taken by multidisciplinary teams for selected topics, e.g. Applied anatomy, Physiology, Pharmacology of commonly used drugs etc.

2. Journal Club :

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. Recommended to be held as for the norms of the Medical Council of India (MCI) rules. All the postgraduate students are expected to attend and actively participate in discussion and enter in the logbook relevant details. Further, every candidate must make a presentation from the allotted journal(s) and relevant points in the logbook during his/her course. The presentations would be evaluated using checklists and would carry weightage for periodic evaluation.

A timetable with names of the students and the moderator should be announced at the beginning of every year.

3. Subject seminar: Recommended to be held as for the norms of MCI rules. All the postgraduate students are expected to attend and actively participate in discussion and enter in the logbook relevant details. The presentations would be evaluated using checklists and would carry weightage for internal assessment (as per annexure). A timetable for the subject with names of the student and the moderator should be scheduled at the beginning of every year. Seminars – on Musculo skeletal trauma and Diseases in orthopaedics.Arthroplasty, spinal instrumentation and Recent advances in orthopaedics. At least 4 seminars per year by each MS candidate.

4.Case Discussion: Recommended to be held once a week. All the post graduate students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table for the case presentation with names of the students should be announced in advance.

5.Pro & Con sessions Controversial topics and Interesting clinical cases are taken up by the Post Graduate students for discussion, once a month.

6.How I do it? Conducting case-discussion of a depicted difficult clinical situation.

7.Ward Rounds: May be service rounds or teaching rounds.

a) Service Rounds: Postgraduate students should do ward rounds every day.

b)Teaching Rounds: Every unit should have grand round for teaching clinical methods.

Entries of (a) and (b) should be made in the logbook.

8.Clinic-Pathological conference (CPC): Recommended once a month for all post graduate students. Presentation to be done by rotation. Presentations will be assessed using checklist. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPC's.

9.Inter departmental meetings (Horizontal and vertical integration) : Strongly recommended particularly with departments of surgery, and allied specialties for discussion of interesting topics. Ortho-radiology and Ortho-pathology meetings should be attended by PGs.To be conducted at least once in three months. Postgraduate students should attend these meetings and relevant entries must be made in the logbook.

10. Teaching skills: Postgraduate students must teach undergraduate students (e.g. medical, paramedical, nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. Assessment is made using a checklist by faculty. Record of their participation should be kept in the logbook. Training of postgraduate students in educational technology is recommended.

11. Continuing Medical Education Programme (CME): At least one state / national level CME Programme should be attended by each student in three years.

- 12. Conferences:** Attending conferences, participation and presentation of scientific paper should be encouraged.
- 13. Research Activities:** The Post-graduate students are to be encouraged to carry out research activities in the department other than dissertation work.
- 14. Student Symposium:** Recommended as an optional multi-disciplinary program. The evaluation may be similar to that described for subject seminar.
- 15. Scientific research society Meetings :** Attending SRS meetings and actively participating in them.
- 16. Participation in state/ National conferences:** A “Post –Graduate of PG course in broad specialties/ Super specialties would be required to present one poster or oral presentation at a National/ State Conference and one research paper which should be published / accepted for publication /sent for publication during the period of his post –graduate studies, so as to make him eligible to appear at the post-graduate degree examination.

Rotation and Posting in other Departments

Basic Sciences

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

Applied subjects – posting in second year

Casualty / emergency medicine for 2 weeks

Anesthesia for 2 weeks

Radiology including CT/MRI for one month

Neurosurgery for one month\

Plastic surgery for one month

Surgical ICU/ general surgical unit for one month

Allied subjects

Posting in artificial limb center / physical medicine and rehabilitation for one month

Training in teaching skills

Bedside clinic for undergraduates for 20 hours

Bedside clinic for first year PG by THIRD Year PG for 10 hours.

Monitoring Learning Progress

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only also 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 Section IV.

The learning out comes to be assessed should include: (i) Personal Attitudes, (ii) Acquisition of Knowledge, (iii) Clinical and operative skills, (iv) Teaching skills and (v) Dissertation.

i) **Personal Attitudes.** The essential items are:

- Caring attitudes

- Initiative
- Organizational ability
- Potential to cope with stressful situations and undertake responsibility
- Trust worthiness and reliability
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues
- Ability to work in team
- 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.

ii) 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.

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.

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.

Clinic-Pathological conferences: 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.

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.

iii) Clinical Operative Skills

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.

Clinical meetings: Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list.

Clinical and Operative Skills: The candidate should give 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.

iv) 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.

- v) **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 University for registration, again before finalization for critical evaluation and another before final submission of the completed work.

- vi) **Periodic tests:** The departments 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. The tests may include written papers, practical's / clinicals and viva voce.

- vii) **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.

- viii) **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 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 Section 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 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.

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 6 short essay questions each carrying 10 marks. Total marks for each paper will be 100. Question on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows:

Paper I	-	Basic and Clinical sciences as applied to Orthopaedics
Paper II	-	Muscular-skeletal Trauma

Paper III - General Orthopaedics, Joint Disorders and Spine

Paper IV - Regional Orthopaedics.

B. Clinical 200 Marks

There shall be one long case and three short cases to be examined and presented by each candidate. Marks shall be 200.

One long case =80marks

Three short cases 40x3=120marks

Total=200marks

C. Viva Voce 100 Marks

1) Viva-Voce Examination: (80 Marks)

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be also be given case reports, charts, gross specimens, pathology slides, instruments, X-rays, ultrasound, CT scan images, etc., for interpretation. It includes discussion on dissertation also.

2) Pedagogy Exercise: (20 Marks)

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

D.

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

Recommended Books and Journals

1. Campbell's Operative Orthopaedics 11th edition, S. Terry Canale, editorial assistance by Kay Daugherty published by MOSBY, St. Louis, USA, 2008, 400UK
2. Fractures in adults & Children 4th Edition Charles A. Rockwood Jr., David P. Green, Robert e. Bucholz, and James D Heckman, 1996, Lippincott-Raven Publishers, USA
3. Orthopaedic, 5th edition, edited by Samuel Turek, published by Jay Pee Brothers New Delhi, 1993
4. Mercer's Orthopaedic surgery 9th edition Robert B Duthie & George Bentley, Published in Great Britain in 1996 by ARNOLD
5. J.N. Wilson Watson – Jones Fracture and Joint injuries 6th edition, published by B.I. Churchill. Livingstone pvt. Ltd. New Delhi – 1992, price: Rs 1400-00.
6. Knee Surgery edited by Paul M. Aichroth & W. Dilworth Cannon, Jr. Published in USA by Raven Press in 1992, \$3127.
7. Total Hip Joint Replacement edited by Eftekhar NS
8. Total Knee Arthroplasty edited by James A. Rand published by Raven press; New York 1993.
9. Turek's text book of orthopaedics
10. Rockwood and Green – text book of fractures and joint injuries
11. Browner – fractures and dislocations
12. Gustilo – fractures and joint injuries
13. Sharrard – paediatric orthopaedics
14. Tachdian – paediatric orthopaedics

15. Eneeking – bone tumours
16. Companacci – bone tumours

Journals

1. Journal of bone and Joint Surgery
2. American journal of Orthopaedics.
3. Clinical Orthopaedics and Related Research.
4. Orthopaedic clinics of North America.
5. Trauma.
6. Arthroscopy.
7. Indian Journal of Orthopaedics.
8. Journal of Arthroplasty.
9. Journal of Spine Surgery.
10. Actaorthopaedica Scandinavia
11. Journal of paediatric Orthopaedics

Section II

Diploma in Orthopaedics (D Ortho)

Goal:

The postgraduate course D.Ortho (Orthopedics) should enable a medical graduate to become a competent specialist, acquire knowledge and skills in educational technology for teaching medical, dental and health sciences and conduct research in bio-medical science.

Objectives:

- i. 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;
- ii. Who shall have mastered most of the competencies, , that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- iii. Who shall be aware of the contemporary advances and developments in orthopedics;
- iv. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology; and
- v. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.
- vi. Continue to evince keen interest in continuing surgical education irrespective of whether he is in a teaching institution or is a practicing surgeon.

Specific Learning Objectives:

The specific learning objectives of postgraduate training course in Orthopedics would be to train a MBBS doctor who will:

- Practice orthopedics efficiently and effectively, backed by scientific knowledge and skill base.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Be a motivated 'teacher' – defined as a orthopedic surgeon keen to share his knowledge and skills with a colleague or a junior or any learner.

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

1. Aware of the current concepts in quality care in orthopaedics and musculo-skeletal orthopaedic problems,
2. Able to offer initial primary management of acute orthopaedics 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.

Course Contents

Essential theoretical knowledge

I. Basic Sciences

Anatomy

- i. Muscular skeletal anatomy – Anatomy of the shoulder girdle, pelvic girdle, upper & lower limbs anatomy of the spine.
- ii. Embryology and development of muscular skeletal system.
- iii. Histology.

Physiology

- i. Physiology of muscular skeletal system
- ii. Metabolism of bone, hormonal influence on muscular skeletal system & other related orthopaedics physiology

Pathology

- i. General pathology
- ii. Tumor pathology in muscular skeletal system
- iii. Other orthopaedics pathology.

Biochemistry

- i. General Biochemistry.
- ii. Biochemical aspects related to orthopaedics diseases

II. CLINICAL ORTHOPAEDICS

General Orthopaedics

- i. General principal of healing of injury & musculoskeletal trauma.
- ii. Systemic management of the injured & body response to trauma.
- iii. Head injury & fascia maxillary injury.
- iv. General principal of management of Neurovascular injury.
- v. Management of poly trauma.
- vi. Consequences of musculoskeletal trauma & rehabilitation of the injured.
- vii. General principal of management musculoskeletal trauma – surgical and conservative.
- viii. Compound injuries – management and stabilization procedures in orthopaedics.
- ix. General principal of management musculo skeletal trauma – in children.

III. ORTHOPAEDIC TRAUMATOLOGY

- i. Musculoskeletal trauma in shoulder girdle and upper limb.
- ii. Musculoskeletal trauma in pelvic girdle and lower limb.
- iii. Injuries of the spine and management of paraplegia.
- iv. Pathological fractures and management.

IV. DISEASES IN ORTHOPAEDICS

- i. Congenital malformations.
- ii. Metabolic, developmental & hormonal disorders in musculoskeletal system.
- iii. Epiphyseal and neuromuscular affections in children.
- iv. Infective Diseases in musculo-skeletal system including polio & Leprosy.
- v. Arthritis and Rheumatic disease.
- vi. Tumours of musculoskeletal system.
- vii. Amputations.

- viii. Prosthetics and orthotics.
- ix. Physical medicine.

V. SPORTS MEDICINE INCLUDING ARTHROSCOPY.

VI. Interventional Radiography

- a) Sinogram.
- b) Myelography
- c) Epidurogram
- d) CT Guided biopsy.
- e) Arthrogram

VII. Knowledge of Surgical Procedures

Pelvic girdle & lower limb

- a) Fracture fixation
- b) Osteotomies and Arthrodosis 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) Stabilisation of pelvic fracture by external fixator.
- o) Acetabular fracture fixation and pelvic osteotomies

VIII. Essential Diagnostic Skills - Instrumentation

Radiology

- a) General musculoskeletal radiology – plain X-ray
- b) MRI.
- c) CT Scan.
- d) Ultrasonography

Interventional Radiography

- a) Sinogram.
- b) Myelography

Arthroscopy

Biopsy

- a) Trocar
- b) FNAC

IX. SURGICAL SKILLS

Anaesthesia

Regional Anaesthesia

- a) Wrist block & Digital block.

- b) Femoral block.
- c) Ankle block.

X. SURGICAL PROCEDURES

Pelvic girdle & lower limb

- a) Fracture fixation
- b) Osteotomies and Arthorodesis in lower limb.
- c) HRA in Hip joint
- d) Soft tissue surgeries.
- e) Foot and ankle surgery.

XI. 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.**
- (**Should know the procedure and observe the procedure*)

XII. 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.**
- (**Should know the procedure and observe the procedure*)

XIII. SURGICAL PROCEDURES – EMERGENCY

- a) Primary wound debridement & External fixater application.
 - b) Emergency amputations.
 - c) *Primary internal fixation for compound fractures.**
- (**Should know the procedure and observe the procedure*)

Graded responsibility in care of patients and operative work

1st YEAR

Trauma care

Closed reductions of fractures, Plaster application,
Debridement of open fractures, External fixations
Internal fixations of minor fractures with K wire

Non-traumatic conditions:

Manipulative correction of congenital problems like CTEV

Biopsies

Excision of benign lesions

Tendon lengthening

Orientation programme -

a) Basic sciences related to orthopaedics. Theoretical knowledge of Anatomy &

Physiology

b) Special emphasis on clinical examination of patients, learning clinical methods, arriving at correct diagnosis.

c) use of library, periodicals, internet and electronic library.

2nd YEAR

Trauma

Tension band wiring of fracture patella, fracture olecranon, etc

DCP of forearm bones, tibia, etc

DHS

Non-traumatic conditions:

Carpal tunnel release

Bone grafting

Soft tissue release under supervision

1. Theoretical knowledge of allied subjects, subspecialties of orthopaedics.

2. Conference and Workshops: attending one state level and one national level conference/CME and presentation of a scientific paper.

3. The student should be actively involved in presentation of seminars, journal clubs, and case presentation/discussions.

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 Musculo skeletal trauma and Diseases in orthopaedics. Arthroplasty, spinal instrumentation and Recent advances in orthopaedics. At least 4 seminars per year by each diploma candidate.
- 4) Should attend CPCs
- 5) Interdepartmental meetings – Ortho-radiology and Ortho-pathology meetings should be attended by PGs

- 6) Should have attended at least one National CME and Orthopaedic conferences during the course.

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

Casualty / emergency medicine for 2 weeks

Anesthesia for 2 weeks

Radiology including CT/MRI for one month

Neurosurgery for one month

Plastic surgery for one month

Surgical ICU/ general surgical unit for one month

Allied subjects

Posting in artificial limb center / physical medicine and rehabilitation for one month

Monitoring Progress of Studies

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only also 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 section III .

The learning out comes to be assessed should include: (i) Personal Attitudes, (ii) Acquisition of Knowledge, (iii) Clinical and operative skills, (iv) Teaching skills .

i. Personal Attitudes. The essential items are:

- Caring attitudes
- Initiative
- Organizational ability
- Potential to cope with stressful situations and undertake responsibility
- Trust worthiness and reliability
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues
- Ability to work in team
- 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.

ii. 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.

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.

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.

Clinico-Pathological conferences: 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.

iii. Clinical Operative Skills

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.

Clinical meetings: Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list.

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.

iv. Periodic tests: The department may conduct two tests, one at the end of first year and the other be held three months before the final examination. The tests may include written papers, practical's / clinicals and viva voce.

v) Work diary / Log Book – Every candidate shall maintain a work diary and record his/her participation in the training programs 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.

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

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 6 short essay questions each carrying 10 marks. Total marks for each paper will be 100. Question on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows:

- Paper I - Basic sciences as applicable to Orthopaedics and Clinical Orthopaedics.
- Paper II - Orthopaedics traumatology
- Paper III - Regional Orthopaedics

B. Clinical 150 Marks

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

One long case=70marks

Two short cases=40x2=80marks

Total Marks shall be 150.

C. Viva Voce 50 Marks

All examiners will conduct viva-voce conjointly on candidate’s comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be also be given case reports, charts, gross specimens, pathology slides, instruments, X-rays, ultrasound, CT scan images, etc., for interpretation.

D.

Maximum marks for	Theory	Practical	Viva	Grand Total
Dip. Orthopaedics	300	150	50	500

Recommended Books and Journals

1. Campbell’s Operative Orthopaedics latest edition, S. Terry Canale, editorial assistance by Kay Daughtery published by MOSBY, St. Louis, USA, 2008,400UK
2. Fractures in adults & Children latest Edition Charles A. Rockwood Jr., David P. Green, Robert e. Bucholz, and James D Heckman, 1996, Lippincott-Raven Publishers, USA
3. Orthopaedic, latest edition, edited by Samuel Turek, published by Jay Pee Brothers New Delhi, 1993
4. Mercer’s Orthopaedic surgery latest edition Robert B Duthie& George Bentley, Published in Great Britain in 1996 by ARNOLD
5. J.N. Wilson Watson – Jones Fracture and Joint injuries latest edition, published by B.I. Churchil. Livingstone pvt. Ltd. New Delhi – 1992,

6. Knee Surgery edited by Paul M. Aichroth & W. Dilworth Cannon, Jr. Published in USA by Raven Press
7. Total Hip Joint Replacement edited by Eftekhar NS
8. Total Knee Arthroplasty edited by James A. Rand published by Raven press; New York.
9. Browner – fractures and dislocations
10. Gustilo – fractures and joint injuries
11. Sharrard – paediatric orthopaedics
12. Tachdain – paediatric orthopaedics
13. Eneking – bone tumours
14. Campanacci – bone tumours

Journals

1. Journal of bone and Joint Surgery
2. American journal of Orthopaedics.
3. Clinical Orthopaedics and Related Research.
4. Orthopaedic clinics of North America.
5. TRAUMA.
6. Arthroscopy.
7. Indian Journal of Orthopaedics.
8. Journal of Arthroplasty.
9. Journal of Spine Surgery.
10. Actaorthopaedica Scandinavia
11. Journal of. paediatric Orthopaedics

SECTION III

MEDICAL ETHICS

Sensitization 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 patient, 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 (i), General Objectives (ii) stated in Chapter II (pages 2.1 to 2.3), and develop human values it is urged that **ethical sensitization** be achieved by lectures or discussion on ethical issues, clinical case discussion of cases with an important ethical component and by including ethical aspects in discussion in all case presentations, bedside rounds and academic postgraduate programs.

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 0
 - 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 Behavior 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. Professional 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 cares
 - Malpractice and Negligence
8. Research Ethics
 - Animal and experimental research / humanness
 - Human experimentation
 - Human volunteer research – Informed Consent
 - Drug trials
 - ICMR Guidelines for Ethical Conduct of Research – Human and Animal
 - ICH / GCP Guidelines
 - Schedule Y of the Drugs and Cosmetics Act.
9. Ethical work -up of cases
 - Gathering all scientific factors
 - Gathering all human factors
 - Gathering value factors
 - Identifying areas of value – conflict, setting of priorities,
 - Working our criteria towards decisions

Additional reading

1. Compendium of Recommendations of Various committees on Health and Development (1943-1975) DGHS, 1985 Central Bureau of Health Intelligence, Directorate General of Health Services, Min. Of Health and Family Welfare, Govt. of India, Nariman Bhawan New-Delhi, P-335
2. National Health Policy: Min. of Health & Family Welfare, Nirman Bhawan, New Delhi, 1983
3. Santosh Kumar: The elements of Research, writing and editing 1994, Dept. of Urology, JIPMER, Pondicherry.
4. Srinivasa D K et al : Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry.
5. Ethical guidelines for biomedical research on human participants I.C.M.R. New Delhi 2006.
6. Code of Medical Ethics framed under Section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi.
7. Francis C.M: Medical Ethics, Jaypee Publications, Bangalore, 2nd Edn-2004.
8. Indian National Science Academy, Guidelines for care and use of animals in Scientific Research, New Delhi, 1994.
9. International Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N England Journal of Medicine. 1991, 424-8
10. Kirkwood B.R. Essentials of Medical Statistics, 1st Ed. Oxford, Blackwell Scientific Publications 1988.
11. Mahajan B.K.: Methods in Bio-statistics for Medical students, 5th Edition new Delhi, Jaypee Brothers Medical Publishers, 1989.
12. K.R. Sundaram, S.N. Dwivedi, V. Srinivas. Medical Statistics. Principles & Methods .B.I. Publications, New Delhi, 2010
13. R.K. Chaube: Consumer Protection Act and Medical Profession, 1st Edition, 1999, Jaypee Brothers

SECTION - IV

ANNEXURES

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 1	Average 2	Good 3	Excellent 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	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.	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 Unit Head:

Date:

Sl. No.	Points to be considered	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.	Bedside manners				
8.	Rapport with patients				
9.	Counseling patient's relatives for blood donation or Postmortem and Case follow up.				
10.	Over all 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	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				
	▪ 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

Sl. 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 sequences 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/SYNOPSIS PRESENTATION

Name of the Student:

Name of the Faculty:

Date:

Sl. No	Points to be considered	Poor	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:

Sl. No.	Items for observation during presentation	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:

College:

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

LOG BOOK

Table 2

Details of participation in teaching programs

Sl. No.	Date	Type/ Topic	Marks / Grade Obtained	Signature

LOG BOOK

TABLE 3

Surgical Techniques Performed

Date	Name and IP No.	Surgery Performed	Type of surgery with details

Model Overall Assessment Sheet

Name of the College:

Academic Year:

Sl. No.	Faculty Member & Others	Name of Student and Mean Score									
		A	B	C	D	E	F	G	H	I	J
1.											
2.											
3.											
4.											
5.											
Total Score											

Note: Use separate sheet for each year.


REGISTRAR
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