Ordinance Governing Post Graduate Degree Courses (Clinical)

*** Syllabus / Curriculum 2017 - 18





Accredited 'A' Grade by NAAC (2nd Cycle) Placed in Category 'A' Grade by MHRD(GoI)

KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH

JNMC Campus, Nehru Nagar, Belagavi - 590 010. Karnataka, INDIA. Phone : +91 0831-2444444, 2493779 FAX : +91 0831-2493777 E-mail : info@kledeemeduniversity.edu.in Website : http://www.kledeemeduniversity.edu.in Edition Year : 2017

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Director, Academic Affairs

Email: diracademic@kledeemeduniversity.edu.in

KLE Academy of Higher Education & Research

JNMC Campus, Nehru Nagar, Belagavi-590010 Ph: 0831-244444 e-mail:info@kledeemeduniversity.edu.in

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4574, Shetty Galli, Belagavi. ☎: 2424124, 2433429 Fax: 2464109 E-mail: omega.offset@yahoo.com



VISION

To be an outstanding KAHER of excellence ever in pursuit of newer horizons to build self reliant global citizens through assured quality educational programs.

MISSION

- To promote sustainable development of higher education consistent with statutory and regulatory requirements.
- To plan continuously provide necessary infrastructure, learning resources required for quality education and innovations.
- To stimulate to extend the frontiers of knowledge, through faculty development and continuing education programs.
- To make research a significant activity involving staff, students and society.
- To promote industry / organization, interaction/collaborations with regional/national / international bodies.
- To establish healthy systems for communication among all stakeholders for vision oriented growth.
- To fulfill the national obligation through rural health missions.

OBJECTIVES

The objectives are to realize the following at KAHER and its constituent institutions:

- To implement effectively the programs through creativity and innovation in teaching, learning and evaluation.
- To make existing programs more careers oriented through effective system of review and redesign of curriculum.
- To impart spirit of enquiry and scientific temperament among students through research oriented activities.
- To enhance reading and learning capabilities among faculty and students and inculcate sense of life long learning.
- To promulgate process for effective, continuous, objective oriented student performance evaluation.
- To ordinate periodic performance evaluation of the faculty.
- To incorporate themes to build values, Civic responsibilities & sense of national integrity.
- To ensure that the academic, career and personal counseling are in-built into the system of curriculum delivery.
- To strengthen, develop and implement staff and student welfare programs.
- To adopt and implement principles of participation, transparency and accountability in governance of academic and administrative activities.
- To constantly display sensitivity and respond to changing educational, social, and community demands.
- To promote public-private partnership.

INSIGNIA



The Emblem of the KAHER is a Philosophical statement in Symbolic.

The Emblem...

A close look at the emblem unveils a pillar, a symbol of the "KAHER of Excellence" built on strong values & principles.

The Palm and the Seven Stars...

The Palm is the palm of the teacher- the hand that acts, promises & guides the students to reach for the Seven Stars...

The Seven Stars signify the 'Saptarishi Dnyanamandal", the Great Bear-a constellation made of Seven Stars in the sky, each signifying a particular Domain. Our culture says: The true objective of human birth is to master these Knowledge Domains.

The Seven Stars also represent the Saptarishis, the founders of KLE Society whose selfless service and intense desire for "Dnyana Dasoha" laid the foundation for creating the knowledge called KLE Society.

Hence another significance of the raised palm is our tribute to these great Souls for making this KAHER a possibility.

Empowering Professionals...

'Empowering Professionals', inscription at the base of the Emblem conveys that out Organization with its strength, maturity and wisdom forever strive to empower the student community to become globally competent professionals. It has been a guiding force for many student generations in the past, and will continue to inspire many forth coming generations.



KLE Academy of Higher Education & Research

(Formerly known as KLE UNIVERSITY)

[Established under Section 3 of the UGC Act, 1956 vide Government of India Notification No. F. 9-19/2000-U.3(A)] Accredited 'A' Grade by NAAC (2nd Cycle) Placed in Category 'A' by MHRD(Gol) JNMC Campus, Nehru Nagar, Belagavi-590 010, Karnataka State, India

Ph: 0831-244444/2493779 Fax : 0831-2493777 Web: http://www.kledeemeduniversity.edu.in E-mail: info@kledeemeduniversity.edu.in

Ref. No. KLEU/AC/17-18/D-216 (7)

NOTIFICATION

Sub: Ordinance governing the syllabus/curriculum for Post Graduate Degree Courses (Medicine)

Ref: Minutes of the meeting of the Academic Council of the KAHER held on 21st April 2017.

In exercise of the powers conferred under Rule A-04 (i) of the Memorandum of Association of the KAHER, the Academic Council of the KAHER is pleased to approve the Ordinance governing the syllabus / curriculum for the following Post-Graduate Degree Course (Medicine) in its meeting held on 21st April 2017.

M.D. (Doctor of Medicine)

- Anaesthesiology
- Dermatology, Venereology and Leprosy
 Obstetrics and Gynaecology
- General Medicine
- Paediatrics
- Psychiatry
- Radiodiagnosis

- M.S. (Master of Surgery)
- General Surgery
- Ophthalmology
- Orthopaedics
- Oto-Rhino-Laryngology

Pulmonary Medicine

The Ordinance shall be effective for the students admitted to aforesaid **Post**-Graduate Degree Course (Medicine) Courses in the constituent college of the KAHER viz. J. N. Medical College, Belagavi from the academic session 2017-18 onwards.

То

The Dean Faculty of Medicine, J.N. Medical College, **BELAGAVI.**

CC to :

- 1. The Secretary, University Grants Commission, New Delhi,
- 2. The Secretary to Chancellor, KAHER, Belagavi.
- 3. The Special Officer to Vice-Chancellor, KAHER, Belagavi.
- 4. All Officers of the KAHER Academic Affairs / Examination Branch.

GISTRAR

Bv Order

25th April 2017

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CHAPTER - I

Regulations for Post Graduate Degree Courses in Medical Sciences

1. Branches of Study :

Postgraduate Degree Courses

The following courses of studies may be pursued.

- 1. M.D. (Doctor of Medicine)
 - 1. Anaesthesiology
 - 2. Dermatology, Venereology and Leprosy
 - 3. General Medicine
 - 4. Paediatrics
 - 5. Psychiatry
 - 6. Radiodiagnosis
 - 7. Pulmonary Medicine

and such other subjects which may be introduced in future from time to time and recognized by Medical Council of India.

- 2. M.S. (Master of Surgery)
 - 1. General Surgery
 - 2. Obstetrics and Gynaecology
 - 3. Ophthalmology
 - 4. Orthopaedics
 - 5. Oto-Rhino-Laryngology

and such other subject which may be introduced in future from time to time and recognized by Medical Council of India. 2. Eligibility for Admission

SELECTION OF POSTGRADUATE STUDENTS

- A. Students for postgraduate medical courses shall be selected strictly on the basis of their academic merit.
- B. For determining the academic merit, the university shall adopt the following procedures for degree courses:
 - i. On the basis of the merit as determined by centralised competitive test held at National level ie NEET-PG (National eligibility cum entrance test) conducted by National Board of Examination.
- 2.1 A candidate affiliated to KAHER and who has passed final year M.B.B.S. examination after pursuing a study in a medical college recognized by Medical Council of India, from a recognized Medical College affiliated to any other university recognized as equivalent thereto, and has completed on 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. Obtaining Eligibility Certificate by the University before making Admission

No candidate shall be admitted for any postgraduate degree course unless the candidate has obtained and produced the eligibility certificate issued by the KAHER. The candidate has to make an application to the KAHER with the following documents along with the prescribed fee :

- 1. MBBS pass / degree certificate issued by the KAHER.
- 2. Marks cards of all the KAHER examinations passed during 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.

Candidates should obtain the Eligibility Certificate before the last date for admission as notified by the KAHER.

A candidate who has been admitted to postgraduate course should register his / her name in the KAHER within a month of admission after paying the registration fee.

4. Intake of Students

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

5. Course of the Study

Duration :

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

The course of study shall be for a period of 3 years consisting of 6 terms.

Exemption of one year period for holder of recognised postgraduate diploma.

There shall be exemption one year period for holders of recognised postgraduate diploma who undertake postgraduate degree course in the same subject.

6. Method of training

The training of postgraduate for degree shall be a full time pattern. 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 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.

- 7. Attendance, Progress and Conduct
- 7.1 A candidate pursuing degree 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.
- 7.2 Each year shall be taken as a unit for the purpose of calculating attendance.

- 7.3 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.
- 7.4 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.
- 7.5 Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the KAHER Examinations.
- 8. Monitoring Progress of Studies:
- 8.1 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 (Please see chapter IV for model check lists and log book specimen copy). 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 and certified by the Head of the Department and Head of the Institution and presented in the university practical/clinical examination.
- 8.2 Periodic tests: In case of degree courses of three years duration, the concerned departments may conduct three tests, two of them be anuual 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, practicals, clinicals and viva voce. Records and marks obtained in such tests will be maintained by the Head of the Department and sent to the University, when called for.
- 8.3 Records: Records and marks obtained in tests will be maintained by the head of the Department and will be made available to the University or MCI.
- 9. Dissertation
- 9.1 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.
- 9.2 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.

- 9.3 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 KAHER. The synopsis shall be sent through the proper channel.
- 9.4 Such synopsis will be reviewed and the dissertation topic will be registered by the KAHER. No change in the dissertation topic or guide shall be made without prior approval of the KAHER.
- 9.5 The dissertation should be written under the following headings:
 - i. Introduction
 - ii. Aims or Objectives of study
 - iii. Review of Literature
 - iv. Material and Methods
 - v. Results
 - vi. Discussion
 - vii. Conclusion
 - viii. Summary
 - ix. References
 - x. Tables
 - xi. Annexures
- 9.6 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.
- 9.7 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 Institute.

- 9.8 The dissertation shall be valued by examiners appointed by the KAHER. Approval of disertation work is an essential precondition for a candidate to appear in the KAHER examination.
- 9.9 Guide: The academic qualification and teaching experience required for recognition by this KAHER 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.
- 9.10 A Co-guide may be included provided the work requires substantial contribution from a sister department or from another medical institution recognized forteaching/training by KAHER / Medical Council of India. The co-guide shall be a recognized post graduate teacher of KAHER.
- 9.11 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 KAHER.
- 10. Schedule of Examination

The examination M.D./M.S. courses shall be held at the end of three academic years (six academic terms). The KAHER shall conduct two examinations in a year at interval of four to six months between the two examination. Not more than two examinations shall be conducted in an academic year.

- 11. Scheme of Examination
- 11.1 M.D./M.S. Degree

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

11.11 Dissertation : Every candidate shall carry out work and submit a dissertation as indicated in SL NO.9. Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

Theory Examination for Degree (Written Paper)

(There shall be 4 theory papers, each of 3 hours duration, carrying 100 marks each.)

Type of Questions	No. of Questions	Marks for each question	Total Marks
Long essay questions	02	20	40
Short essay questions	06	10	60
GRAND TOTAL			100

- 11.1.2 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 shall be covered in 4th paper. In basic medical subjects and para-clinical subjects, questions on applied clinical aspects should also be asked.
- 11.1.3 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 300.

- 11.1.4 Viva Voce: Viva Voce Examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 100 and the distribution of marks shall be as under :
 - (i) For examination of all components of syllabus 80 Marks

(ii) For Pedagogy on dissertation topic 20 Marks

Candidate is asked to make a presentation for 8-10 minutes either on a topic: given in the beginning of clinical examination or on the dissertation topic.

- 11.1.5 Criteria for declaring as pass in KAHER 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 viva voce examination separately.

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.

- 11.1.6 Declaration of distinction : A successful candidate passing the KAHER examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate marks is 75 percent and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.
- 12. Number of Candidates perday : The maximum number of candidates for practical/clinical and viva-voce examination for degree course shall be 6 per day.

CHAPTER - II

Goals and General Objectives of Postgraduate Medical Education Programme

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, pertaining to the speciality, 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 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 speciality in the context of the health need of the community and the national priorities in the health sector.
- ii) Practice the speciality concerned ethically and in step with the principles of primary health care.
- iii) Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.
- 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 speciality 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 behaviour in accordance with the social norms and expectations.
- ix) Play the assigned role in the implementation of national health programmes, 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; re ect and use appropriate learning resources.
- xii) Demonstrate competence in basic concepts 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 health team engaged in health care, research or training.

Statement of the Competencies

Keeping in view the general objectives of postgraduate training, each discripline 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 PG Curriculum

The major components of the PG curriculum shall be:

- Theoretical knowledge
- Practical / clinical Skills
- Training in Thesis.
- Attitudes, including communication.
- Training in reaserch methodology.

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

CHAPTER - III COURSE DESCRIPTION

- 1. M.D. (Doctor of Medicine)
 - 1. Anaesthesiology
 - 2. Dermatology, Venereology and Leprosy
 - 3. General Medicine
 - 4. Paediatrics
 - 5. Psychiatry
 - 6. Radiodiagnosis
 - 7. Pulmonary Medicine
- 2. M.S. (Master of Surgery)
 - 1. General Surgery
 - 2. Obstetrics and Gynaecology
 - 3. Ophthalmology
 - 4. Orthopaedics
 - 5. Oto-Rhino-Laryngology

Post Graduate Degree Course (MD) in Anaesthesia

I. GOALS:

The MD course in anaesthesiology is a three year integrated course after satisfactory completion of which candidate shall be able to practice anaesthesiology completely, confidently and safely in the community that he/she serves.

The goals of postgraduate training course would be to train M.B.B.S. doctor who will:

- 1. Practice independently the art and science of anesthesiology, backed by scientific knowledge and skill based approach.
- 2. Undertake responsibilities in critical care, trauma, and respiratory therapy and resuscitation of unconscious patients.
- 3. Become skilled in acute and chronic pain management.
- 4. Be motivated 'teacher'- defined as anesthesiologist keen to share his/her knowledge and skills with a colleague or a junior or any learner.
- 5. Know the principles of research methodology and modes of consulting library.

II OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives have to be achieved by the candidates by the time of completion of the course.

The objectives may be considered under the following headings.

Knowledge

Skills

Human values, ethical practice and communication abilities

Research activities.

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

A. Knowledge:

- Demonstrate understanding of basic sciences relevant to anaesthesia.
- Describe the anaesthetic management of common and uncommon surgical ailments belonging to various branches of surgery, 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, pain perception and pain 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 anaesthesia.
- Demonstrate understanding of medico-legal aspects of anaesthesia.
- 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 -

- Perform 'pre-anaesthetic evaluation' of patients undergoing surgery by taking, proper clinical history, examining the patient, ordering relevant investigations and interpreting them to have additional information about the surgical condition, and or the associated medical condition, which warrant the modification of the proposed anaesthetic management.
- Administer anaesthesia (general and or regional) to common surgical operations independently and to allied specializations like cardiac surgery, neurosurgery etc. with the help of a senior anaesthesiologist.
- Provide Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS).
- Manage airway and perform ventilatory care etc, of unconscious and polytrauma cases as a member of trauma team and critical care unit team.
- Undertake complete patient clinical monitoring and using aids like monitors including preoperative, intra-operative and postoperative ventilatory care of the patients.
- Perform acute and chronic pain management.

C. Human values, ethical practice and communication abilities

- Adopt ethical principles in all aspects of anaesthetic practice. Professional honesty and integrity are to be fostered. Anaesthesia 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 anaesthetic management, critical care, pain management and to obtain written informed consent from the patient.
- 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.

III COURSE CONTENTS:

Theory

It includes topics not only of Anaesthesiology but also those aspects of all the other branches of medicine relevant to Anaesthesia viz., Medicine and its allied subjects, Surgery and its allied branches, Pediatrics, applied Anatomy, Physiology, Pathology, Pharmacology, Microbiology etc. It is intended as a guide to the candidates and it is not comprehensive. As and when there is newer development, it becomes eligible for inclusion. Hence, the candidates should be familiar themselves with the current content of the scientific journals and reviews of major topics in Anaesthesia.

- 1. History of Anaesthesiology.
- 2. Basic Sciences related to Anaesthesia including Anatomy, Physiology, Pharmacology, Biochemistry, Patho physiology, Immunology and Genetics.
- 3. Medicine applied to Anaesthesiology.

- 4. Physics related to Anaesthesiology, Electronics, Computers and Lasers in Anaesthesiology. Internet / Medline and its uses and applications.
- 5. Anaesthesiology.
 - i. Pre anaesthetic evaluation and preparation.
 - ii. Principles and Practice of Anaesthesiology including pre, per and post operative care of patients belonging to General Surgery, Obstetrics and Gynecology, ENT, Ophthalmology, Orthopedics, and other superspecialties like Cardio thoracic Surgery, Neurosurgery, Plastic Surgery and Surgical Endocrinology, Surgical Oncology, Pediatric, Urology, Dental Surgery, Laparoscopic Surgery, Organ transplantation etc.
 - iii. Blood transfusion-Fluid and Electrolyte balance, Acid Base Balance.
 - iv. Fires and Explosion in operation theatre.
 - v. Operation Theatre sterilization procedures.
 - vi. Different methods of anaesthetic techniques.
 - vii. Regional anaesthesia including spinal, epidural and caudal etc.
 - viii. Local Anaesthesia including peripheral nerve blocks and sympathetic nerve block, etc.
 - ix. Complication in Anaesthesiology and their management both per and post operatively.
- 6. Pain Clinic organization and management. Pain pathway and management of acute and chronic pain.
- 7. Respiratory therapy and management of both acute and chronic respiratory insufficiencies and ventilator commitments in intensive care unit, surgical intensive care unit, medical intensive care unit, neuro surgical intensive care unit and trauma care.
- 8. Critical Care Anaesthesiology and Trauma Care Unit and Resuscitation.
 - Anaesthesia in abnormal environments like high altitude anaesthesia etc.
 - Anaesthesia for day care surgery.
 - Anaesthesia for diagnostic procedure like endoscopies, Computerized Tomographic Scan (C.T. Scan) Magnetic Resonance Imaging (M.R.I.) etc.

- 9. Informed consent/ medico-legal issues: understanding the implications of acts of omission and commission in practice. Issues regarding consumer protection act. Implications in medico-legal cases.
- 10. Communication skills with colleagues, teachers, patients, and patients relatives.
- 11. Principles of anaesthesia audit, understanding the audit process and outcome; methods adopted for the same.
- 12. Principles of Evidence Based Medicine and its application in anaesthetic practice.
- 13. Medical ethics/social responsibilities of the anesthesiologists.
- 14. Record keeping: Ability to keep records as scientifically as possible; with the knowledge of computer.

Year Wise Structured Training Schedule

First Year:

- 1. Orientation programme and basic sciences related to anesthesiology: Theoretical knowledge, frequent visits to anatomy dissection halls and museum, Physiology laboratories etc., to revise the relevant subjects.
- 2. Theoretical knowledge of Anaesthesiology and Resuscitation: Special emphasis on clinical examination of patients, learning clinical methods, arriving at correct diagnosis.
- 3. Basic knowledge about

Computers in Anaesthesia, Medline, Internet.

Bio Statistics.

Medical Audit.

Medicolegal Aspects.

Research Methodology.

Evidence Based Medicine.

Medical Ethics and Social responsibilities of Anesthesiologists

- 4. Anaesthesia Skills
 - Pre anaesthetic evaluation under supervision.

- Monitoring of patients throughout perioperative period. Become skilled in using and interpreting the following routine noninvasive monitors intra operatively
- Electro Cardiography (ECG) with ST segment analysis
- Non Invasive Blood Pressure monitoring (NIBP)
- Capnograph: values and changes in waveform
- Pulse oximetry: values and changes in waveform
- Neuromuscular blockade monitor
- Central Venous Pressure, values and waveform
- Assisting setting up of anaesthesia machine, monitor and ventilator.
- Assisting the conduct of anaesthesia for major surgeries; knowledge about the complications of anaesthesia.
- Assisting for short anaesthesia initially and later on doing independently under supervision
- Conduct of anaesthesia in Out Patient Department (OPD).
- Cardio Pulmonary Resuscitation (CPR) training and mastering of Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS).
- **5. Dissertation:** Choosing a topic of dissertation, submission of synopsis to the university, collection of literature, conduct of pilot studies.

Second Year:

- 1. Theoretical knowledge of allied subjects, subspecialties of anaesthesia. Assisting senior anesthesiologists in specialized branches like pediatric surgery, cardio thoracic surgery, critical care trauma etc.
- 2. Anaesthetic Skills: At the end of 2nd year the student should be capable of:
 - a) Anaesthetizing patients without assistance but under supervision.
 - b) Identifying the complication of anaesthesia and manage them independently but under supervision.
 - c) Setting up of anaesthesia machine, monitor and ventilator independently.
- 3. Conference and Workshops: attending one state level and one national level conference/CME and presentation of a scientific paper.

- 4. 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.
- 5. The student should be actively involved in presentation of seminars, journal clubs, and case presentation/discussions.

Third Year:

- 1. The student should be well versed with basics, allied subjects and recent advances in the respective fields.
- 2. Anaesthesia Skills: At the end of the 3rd year the candidate should be able to make independent decisions as regards anaesthesia, pain management and post operative care of all kinds of patients.
- 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.
- 5. The student must get expertise in the specialized procedures as noted in the course content table.

IV. TEACHING AND 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 anaesthetic drugs etc.
- 2) Journal Club: 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 internal assessment (as per annexure). 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.
- 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) Ward Rounds: May be service rounds or teaching rounds.
 - a) Service Rounds: Postgraduate students should do ward rounds every day.

i) For pre anaesthetic evaluation of the patients posted for operation.

ii) And to do the post anaesthetic follow up of operated patients for alleviation of post-operative pain and for diagnosis and management if any of the post-operative sequelae.

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

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

- 6) Clinico-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.
- 7) Inter departmental meetings: Strongly recommended particularly with departments of surgery and the allied practices for discussion of interesting cases conducted at least once in three months. Postgraduate students should attend these meetings and relevant entries must be made in the logbook.
- 8) Mortality and Morbidity meetings: Recommended once a month for all postgraduate students. Presentation is to be done by rotation and by the students who had conducted/assisted anaesthetic management.
- **9) 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.
- **10) Continuing Medical Education Programme (CME):** At least one state / national level CME programme should be attended by each student in three years.
- **11) Conferences:** Attending conferences, participation and presentation of scientific paper should be encouraged.

- **12) Research Activities:** The Post-graduate students are to be encouraged to carry out research activities in the department other than dissertation work.
- **13) Student Symposium:** Recommended as an optional multi disciplinary program. The evaluation may be similar to that described for subject seminar.

B) Clinical / Practical Training

The list within the tables indicates the procedures that the student should by the end of the course, be able to perform independently (PI) by himself / herself, should have performed with assistance (PA) should have observed (O) or assisted (A) during the course.

Operative Skills

Skills may be considered under the following headings:

- 1. Basic Graduate Skills.
- 2. Anaesthesia Procedures.
- 3. Critical Care Procedures.
- 4. Emergency Room Procedures.
- 5. Pain Alleviation Procedures.
- 6. Special Monitoring Techniques.

1) Basic Graduate Skills:

The student should have acquired the certain skills during his undergraduation and internship. There skills have to be reinforced at the beginning of the training period. There include;

Category	Year	No
PI	Ι	150
PI	Ι	100
PI	I	50
PI	1/11/111	50/100/100
	Category Pl Pl Pl Pl	CategoryYearPIIPIIPIIPII

Nasopharyngeal	PI	1/11/111	25/25/35
Intubation			
Orotracheal intubation	PI	1/11/111	25/50/100
Nasotracheal Intubation	PI	1/11/111	25/25/25
Endobronchial (double lumen tube)	PA	11/111	02/05
Retrograde intubation	Ο	11/111	02/02
Fiber optic intubation	PA	11/111	02/02
LMA			
LMA insertion	PI	1/11/111	25/25/25
Intubating LMA	PI	11/111	02/05
Regional blocks			
Subarachnoid block	PI	1/11/111	50/100/100
Epidural block	PI	1/11/111	15/25/50
Caudal block	PI	1/11/111	05/10/15
Brachial plexus block	PI	11/111	05/10
Wrist block	PI	11/111	02/05
Ankle block	PI	11/111	02/05
Popliteal block	PI	11/111	02/05
Intravenous Regional Analgesia	PI	11/111	05/10
Three in one block	PI	11/111	02/05
Rectus sheath block	PA	11/111	02/02
Hernia block	PI	11/111	05/10
Anaesthetic procedures			
Major anaesthesia procedures	PA/PI	1/11/111	50/100/150
Minor anaesthesia procedures	PA/PI	1/11/111	50/100/200

3) Critical Care Procedures:

Insertion of arterial lines	PI	11/111	05/05
Insertion of central venous lines	PI	11/111	05/15
Intercostal drainage	Ο	11/111	05/05
Tracheostomy	Ο	III	10
Ventilatory management of patients	PI	11/111	10/25
Sampling for and interpretation of arterial blood gases (ABG)	PI	11/111	10/50
Correction of electrolyte imbalance	PI	11/111	10/50
Fiber Optic Bronchoscopy	Ο	III	10
Cricothyrotomy	Ο	III	10
Insertion of pulmonary artery catheter	Ο	III	05
4) Emergency Room Procedures:			
Management of airway obstruction	PI	11/111	10/25
Management of shock	PI	11/111	10/25
Management of respiratory failure	PI	11/111	05/10
Management of cardiac failure	PI	11/111	02/05
Cardio Pulmonary Resuscitation (CPR)			
Basic Life Support and			
Advance Cardiac Life Support	PI	11/111	05/15
5) Pain Alleviation Procedures:			
Acute pain management			
Chronic pain management			
Postoperative pain management	PI	11/111	50/100
Labour analgesia	PI	11/111	10/15

Under Radiographic Guidance

Stellate ganglion block	PA	III	02
Coeliac ganglion block	PA	III	02
Trigeminal nerve block	PA	III	02
Neurolysis and other nerve abla	tion		
Procedures including	PA	III	02
Ultrasound guided nerve blocks	5		
TENS	PI	11/111	02/02
6) Special Monitoring Techniqu	ies		
Bi-Spectral Index (BIS)	О	11/111	05/05
Nerve stimulator	PA	11/111	05/05
Invasive Blood Pressure monitoring (IBP)PA		11/111	05/05
Pulmonary Artery Pressure monitor	ring (PAP) O	11/111	05/05
Central Venous Pressure monitor	ing (CVP) PA	11/111	05/05
Trans Esophageal Echocardiogra	aphy (TEE) O	11/111	05/05

Rotational Postings in other departments: (Subject Wise)

The listed knowledge and skills are to be learnt over a period of 3 years. The process is a continuous one. However the recommended period and timing of training in basic sciences, allied departments and speciality departments are given below. The total duration of postings in allied and sub-specialities will be 8 months and the remaining 2 years and 4 months in the mother department.

Basic Sciences: Rotation in these departments viz., Anatomy, Physiology, Pharmacology etc. are to done as concurrent studies during the 1st year of training. Basic Science relevant to anaesthesia can be studied in the respective departments in the afternoons.

Anatomy: Special emphasis for the dissection of larynx, trachea, heart, various nerves and plexuses.

Physiology: Thorough revision of all the systems, in particular Cardio Vascular System and Respiratory System.

Pharmacology: Drugs used in anaesthesia and drugs used for management of systemic disease and drug interactions.

Allied Speciality: Students should be posted to Intensive Care Unit (ICU), Intensive Coronary Care Unit (ICCU), Surgical Intensive Care Unit (SICU), Trauma unit and pain clinic during 2nd year of training for two weeks in each, for total duration of two months.

Clinical Posting to other subspecialty departments will be during 2nd year and the duration of postings are as under;

Cardio thoracic Surgery, Cardiac Cath Lab	—	4 weeks
Neuro surgery	—	4 weeks
Pediatric surgery	—	4 weeks
Cancer surgery	—	2 weeks
Oromaxillary surgery	_	2 weeks
Plastic surgery	_	2 weeks
Urology	_	2 weeks
Laproscopic and Endoscopic surgery	_	2 weeks
Anaesthesia for investigative procedure like CT Scan, Lithotripsy,	_	2 weeks

24 weeks

V. OTHER CRITERIA TO FULFILL FOR THE MD COURSE

1. Internal evaluation

During the course of three years, the department will conduct three tests. Two of them will be annual, one at the end of first year and other at the end of second year. The third test will be preliminary examination which may be held three months before the final examination. The test may include the written papers, practicals / clinicals and viva voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the University when called for.

Results of all evaluations should be entered into PG's diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and

communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/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. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures performed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the University practical / clinical examination.

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 is be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and the assessment will be done using checklists that assess various aspects.

The learning out comes to be assessed 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.

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)

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)

Clinico-Pathological Conferences (CPC): 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 checklist similar to that used for seminar.

iii) 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 (see Model checklist III).

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).

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)

(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 (see Model checklist V)

(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 (see Model checklist VI and VII).

(vi) 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. The work diary shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the university practical/clinical examination.

(vii) **Periodic tests:** The departments may conduct three tests, two of them being 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.

(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.

2. Maintenance of Log Book:

The logbook 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 program of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate.

3. Dissertation:

Every candidate pursuing MD degree course in Anaesthesiology 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.

- 1. 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, comparison of results and drawing conclusions.
- 2. Every candidate shall submit to 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.

- 3. Such synopsis will be reviewed and the University will register the dissertation topic. No changes in the dissertation topic or guide shall be made without prior approval of the University.
- 4. The dissertation should be written under the following headings:
- i. Introduction
- ii. Aims or Objectives of study
- iii. Review of Literature
- iv. Material and Methods
- v. Results
- vi. Discussion
- vii. Conclusion
- viii. Summary
- ix. References
- x. Tables
- xi. Annexure
- 5. The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other checklists. 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.
- 6. Four copies of dissertation thus prepared shall be submitted to the University, six months before final examination on or before the dates notified by the University.
- 7. 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.
- 8. Guide: The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work shall be 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 postgraduate degree, shall be recognized as postgraduate teachers.

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 the University / Medical Council of India. The co-guide shall be a recognized postgraduate teacher.

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.

Format for the log book for the different activities is given in Tables 1, 2 and 3 and Check lists I to VII has been enclosed as a annexure

Procedure for defaulters: Every department should have a committee to review such situations. The defaulting candidate is counselled 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.

VI SCHEME OF EXAMINATION

A) Theory Examination:

Written examination shall consist of four question papers each of three hours duration.

Type of Questions	Number of Questions	Marks for each question	Total Marks
Long essay	2	20	40
Short essay	6	10	60
GRAND TOTAL	·		100

Total marks for each paper will be 100.

Paper I: Basic Science as applicable to Anaesthesia.

100 marks

- 1. Applied Anatomy.
- 2. Applied Physiology.
- 3. Applied Pharmacology.

- 4. Applied Physics.
- 5. Applied Biochemistry.
- 6. Patho Physiology.
- 7. History
- 8. Equipments.

Paper II : Clinical Practice of Anaesthesia.

- 1. Cardio Vascular System.
- 2. Respiratory System.
- 3. Neuro Surgery.
- 4. Obstetrics and Gyanecology
- 5. Orthopaedics.
- 6. Ophthalmology.

Paper III: Clinical Practice of Anaesthesia.

- 1. Pediatrics.
- 2. Renal and Hepatic system.
- 3. Endocrines.
- 4. Haemopoietics.
- 5. Geriatrics
- 6. E.N.T.
- 7. Out Patient Anesthesia and Dental Anaesthesia.

100 marks

100 marks

8. Nerve Blocks.

Paper IVApplied Medicine in Relation to Anaesthesia.100 marks

Theoretical Aspects of pain and pain relief including postoperative and cancer pain.

Note: The distribution of chapters / topics shown against the papers are suggestive only and may overlap or change.

A) Clinical Examination:

300 marks

To elicit competence in clinical skills and to discuss differential diagnostic therapeutic aspects.

Types of Cases	No of Cases	Marks
Long case	1	150
Short Cases	2 (75 marks each)	150
Total	3	300
B) Viva-Voce Examination:		100 marks

Aims: To elicit candidate's knowledge and investigative / therapeutic skills.

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 the candidates may also be given instruments/equipments, X-ray images, ABG reports, ECG strips, Drugs Ultrasound/Echocardiography reports for interpretation and questions on these as well as use of instruments will be asked. It includes discussion on dissertation also.

2) Pedagogy Exercise and Log Book – (20 marks)

- (i) Candidate is asked to make a presentation for 8-10 minutes on a topic given in the beginning of clinical examination 10 marks
- (ii) Candidate is asked to make a presentation for 8-10 minutes on the dissertation topic and the review of Log Book. 10 marks

C) Table showing maximum marks:

Maximum marks for	Theory	Practical	Viva	Grand Total
MD Anaesthesiology	400	300	100	800

1 A Symopsis of Anaesthesia Atkinson RS, Rushman GB and Lee J. Wright - PSG 2 Textbook of Anaesthesia Atkenhead AR et al Churchill-Livingstone 3 Obsteric and Gynecologic Anaesthesia Braveman Bl Publications Pxt Ltd. 4 Attas of Regional Anaesthesia Brown Bl Publications Pxt Ltd. 5 Essential Anatomy for Anesthesia and Black SM, et al. Churchill-Livingstone 6 TEF Rocket Manual Butterworth Bl Publications Pxt Ltd. 7 Management of Pain Bonica JJ, et al Lea and Febiger 9 Principles of Anesthesiology Collins VJ, et al Lea and Febiger 10 Trauma Anesthesia and Intensive Care Capan LM, et al Uppincott 11 Peripheral nerve blocks Chelly Bl Publications Pxt. Ltd. 12 Clinical Neuroanaesthesia Collins VJ, et al Williams and Wilkins 13 Basic Physics and Measurements in Anaesthesia Collins VJ, et al Williams and Wilkins 14 Physiology of Spinal Anesthesia Griene NM, et al Williams and Wilkins 15 Regional Anaesthesia and Pain management Dureja Bl Publications Pxt. Ltd. 16 Understanding Anesthesia Griene NM, et al Williams and Wilkins	S.NO.	Name of the Book	Name of the author	Publisher
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	45	Understanding Pediatric Anaesthesia	Jacob	BI Publications Pvt. Ltd.

VII. Recommended Books (Latest editions):

VIII.	Recommend	led	Journal	s
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S. No.	Name of the journal
1	Anaesthesia
2	Journal of Anesthesiology Clinical Pharmacology
3	Anesthesia and Analgesia
4	Anesthesiology
5	Indian Journal of Anaesthesia
6	Canadian Journal of Anaesthesia
7	British Journal of Anaesthesia
8	Acta Anaesthesiologica Scandinavica
9	Current Opinion in Anesthesiology
10	European Journal of Anesthesiology
11	International Anaesthesiology Clinics
12	Journal of Clinical Monitoring and Computing
13	Journal of Intensive Care Medicine
14	Journal of Neurosurgical Anaesthesiology
15	Pediatric Anaesthesia
16	Anaesthesiologic Clinics of North America
17	Asian Archives of Anaesthesiology and Resuscitation
18	Indian Journal of Critical Care Medicine
19	Annals of Emergency Medicine
20	Journal of Trauma-Injury Infection and Critical Care
21	The Pain Clinic
22	Pain Medicine
23	Critical Care Medicine

POST GRADUATE DEGREE COURSE M.D IN DERMATOLOGY, VENEREOLOGY AND LEPROSY

I. GOALS

The course of the postgraduate students in Dermatology, Venereology and Leprosy is to impart knowledge and skills that may enable them to diagnose and treat common and rare diseases, complications of skin diseases and their unusual manifestations. The student should also be aware of the recent advances in the speciality.

They should also be able to:

- Practice efficiently and effectively, backed by scientific knowledge and skill base.
- Exercise empathy and a caring attitude, maintaining high ethical standards.
- Continue to evince keen interest in continuing medical education in the speciality, irrespective of whether he/she is in a teaching institution or a practicing specialist.
- Be a motivated 'teacher' defined as a specialist keen to share his/her knowledge and skills with a colleague or a junior or any learner.

II. OBJECTIVES

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the subheadings.

- 1. Knowledge
- 2. Skills
- 3. Human values, ethical practice and communication abilities.

1. Knowledge

At the end of the course of Dermatology, Venereology and Leprosy the student should be able to:

• Demonstrate sound knowledge of common diseases, their clinical manifestations, including emergency situations and investigative procedures to confirm the diagnosis.

- Demonstrate comprehensive knowledge of various modes of topical therapy.
- Describe the mode of action of commonly used drugs, their doses, sideeffects/toxicity, indications and contra-indications and drug interactions.
- Describe commonly used modes of management including the medical and surgical procedures available for the treatment of various diseases and to offer a comprehensive plan of management for a given disorder.
- Diagnose and manage emergencies, specially recognizing the need for referral wherever appropriate and necessary.
- Demonstrate understanding of basic sciences relevant to the speciality.
- Identify social, economic, environmental and emotional determinants in a given case, and take them into account for planning therapeutic measures.
- Recognize conditions that may be outside the area of his/her speciality/ competence and to refer them to the proper specialist.
- Update oneself by self-study and by attending courses, conferences and seminars relevant to the speciality.
- Teach and guide his/her team, colleagues and other students.
- Undertake audit, use information technology tools and carry out research, both basic and clinical, with the aim of publishing his/her work and presenting his/her work at various scientific forums.

2. Skills

- Should be able to do:
 - Slit skin smears
 - KOH examination for fungal filaments
 - Wood's lamp examination
 - Tzanck smear
 - Skin biopsy for diagnostic purposes
 - Dermabrasion
 - Cautery chemical, electrical, radiofrequency

- Punch grafting for vitiligo
- Phototherapy (UVB, UVA, PUVA)
- Iontophoresis
- Comedone extraction
- Chemical peeling
- Molluscum and Milia extraction
- Suture techniques
- Lasers, Cryotherapy, Nail Surgery, Acne Surgery
- Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to arrive at a reasonable diagnosis.
- Perform common procedures relevant to the speciality.
- Provide basic and advanced life support services in emergency situations.
- Should be able to monitor the patient effectively.

3. Human values, ethical practice and communication abilities

- Adopt ethical principles in all aspects of his/her practice. Professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his/her 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/her knowledge and skill and to ask for help from colleagues when needed.
- Respect the patient's rights and privileges including the right to information and the right to seek a second opinion.

III. COURSE CONTENTS

No limit can be fixed and no fixed number of topics can be prescribed as course contents. He/she is expected to know his subject in depth, but emphasis should be laid on the diseases/health problems most prevalent in that area. Knowledge of recent advances and basic sciences as applicable to his/her speciality should get high priority. Competence in surgical skills commensurate with the speciality (actual hands on training) must be ensured.

i) Theory

DERMATOLOGY

- 1. Basics of cutaneous bacteriology, mycology, virology, parasitology and host resistance
- 2. Common laboratory procedures, stains and culture media etc. related to the cutaneous diagnosis
- 3. Basic pathologic patterns and reactions of skin
- 4. Common laboratory stains and procedures used in the histopathological diagnosis of skin diseases and special techniques such as immunofluorescence, immunoperoxidase techniques and other related techniques
- 5. Introduction and Historical Bibliography
- 6. Comparative Dermatology
- 7. Anatomy and Organization of Human Skin
- 8. Functions of the Skin
- 9. Diagnosis of Skin Disease
- 10. Epidemiology of Skin Disease, Evidence Based Dermatology
- 11. Histopathology of the Skin: General Principles
- 12. Molecular Biology
- 13. Inflammation
- 14. Clinical Immunology, Allergy and Photoimmunology
- 15. Wound Healing

- 16. Genetics and Genodermatoses
- 17. Prenatal Diagnosis of Genetic Skin Disease
- 18. Neonatal skin disorders
- 19. Naevi and other Developmental Defects
- 20. Pruritus
- 21. Eczema, Lichenification, Prurigo and Erythroderma
- 22. Atopic Dermatitis
- 23. Contact Dermatitis: Irritant
- 24. Contact Dermatitis: Allergic
- 25. Occupational Dermatoses
- 26. Mechanical and Thermal Injury
- 27. Reactions to Cold
- 28. Cutaneous Photobiology
- 29. Viral Infections
- 30. Bacterial Infections
- 31. Mycobacterial Infections
- 32. The Treponematoses
- 33. Mycology
- 34. Parasitic Worms and Protozoa
- 35. Diseases Caused by Arthropods
- 36. Disorders of Keratinization
- 37. Psoriasis
- 38. Non-Melanoma Skin Cancer and Other Epidermal Skin Tumours
- 39. Tumours of the Skin Appendages
- 40. Disorders of the Cutaneous Melanocyte
- 41. Disorders of Skin Colour

- 42. Genetic Blistering Diseases
- 43. Immunobullous Diseases
- 44. Lichen Planus and Lichenoid Disorders
- 45. Disorders of the Sebaceous Glands
- 46. Rosacea, Perioral Dermatitis and Similar Dermatoses, Flushing and Flushing Syndromes
- 47. Disorders of Sweat Glands
- 48. Disorders of Connective Tissue
- 49. Urticaria and Mastocytosis
- 50. Purpura and Microvascular Occlusion
- 51. Vasculitis, Neutrophilic Dermatoses and Related Disorders
- 52. Diseases of the Veins and Arteries: Leg ulcers
- 53. Disorders of Lymphatic Vessels
- 54. Histiocytoses
- 55. Soft-Tissue Tumours and Tumour-like Conditions
- 56. Cutaneous Lymphomas and Lymphocytic Infiltrates
- 57. Disorders of Subcutaneous Fat
- 58. The 'Connective Tissue Diseases'
- 59. Metabolic and Nutritional Disorders
- 60. Sarcoidosis and other Granulomas
- 61. Systemic Disease and the Skin
- 62. The Skin and the Nervous System
- 63. Psychocutaneous Disorders
- 64. Disorders of Nails
- 65. Disorders of Hair
- 66. The Skin and the Eyes

- 67. The External Ear
- 68. The Oral Cavity and Lips
- 69. The Breast
- 70. The Genital, Perianal and Umbilical Regions
- 71. Racial Influences on Skin Disease
- 72. The Ages of Man and their Dermatoses
- 73. General Aspects of Treatment
- 74. Systemic Therapy
- 75. Drug Reactions
- 76. Erythema Multiforme, Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis
- 77. Topical Therapy
- 78. Radiotherapy and Reactions to Ionizing Radiation
- 79. Physical and Laser Therapies
- 80. Dermatological Surgery and Cosmetic Procedures
- 81. Formulary of Topical Applications
- 82. Pregnancy and Skin
- 83. Graft versus host disease

84. Skin changes due to chemical, drugs and organ transplant

LEPROSY

- 1. Epidemiology
- 2. Genetic aspects of leprosy
- 3. Aetiology Structure and microbiology of Mycobacterium leprae
- 4. Pathogenesis and Immunology of leprosy
- 5. Classifications of leprosy
- 6. Clinical Manifestations of leprosy

- 7. Examination of a leprosy patient
- 8. Histopathology of leprosy
- 9. Lepra reactions
- a. Immunology
- b. Clinical presentations
- c. Histopathology
- 10. Deformities in leprosy, their prevention and treatment
- 11. Systemic involvement in leprosy
- 12. Diagnosis of leprosy
- 13. Differential diagnosis of leprosy
- 14. Experimental transmission of Mycobacterium leprae
- 15. Prognosis of leprosy
- 16. Management of leprosy and lepra reactions
- 17. Immunotherapy in leprosy
- 18. Newer drugs in leprosy
- 19. Leprosy control programmes
- 20. Socio-economic aspects of leprosy

VENEREOLOGY

- A) SEXUALLY TRANSMITTED INFECTIONS
 - 1. Epidemiology and Introduction of Sexually Transmitted Infections
 - 2. Applied Anatomy of Male and Female Reproductive Tract
 - 3. Examination of the Patient in an STI Clinic
 - 4. Side Laboratory Procedures in Sexually Transmitted Infections
 - 5. Syphilis
 - Early Acquired Syphilis

- Late Acquired Syphilis
- Cardiovascular Syphilis
- Neurosyphilis
- Congenital Syphilis
- Serological Tests and their Interpretation
- Treatment of Syphilis
- Prognosis of Syphilis
- 6. Gonorrhoea
 - Mode of Infection, Diagnostic Methods, Pathology, Incubation Period
 - Gonorrhoea in the Male
 - Gonorrhoea in the Female
 - Metastatic Gonorrhoea, Oropharyngeal Gonorrhoea, Proctitis, Conjunctivitis
 - Gonorrhoea in Children
 - Treatment and Prognosis of Gonorrhoea
- 7. Chancroid
- 8. Lymphogranuloma Venereum
- 9. Granuloma Inguinale
- 10. 'Non-specific' Urogenital Infections
- 11. Non-gonococcal Genital Infections in Children
- 12. Non-gonococcal Ophthalmia
- 13. Trichomonal Infestation of the Genital Tract
- 14. Candidosis of the Genital Tract
- 15. Herpes Genitalis & Hepatitis B infection
- 16. Pelvic Inflammatory Disease
- 17. Bacterial Vaginosis

- 18. Epididymitis and Prostatitis
- 19. Sexually Transmitted Diseases Associated Arthritis
- 20. Sexually Transmitted Diseases in Children
- 21. Sexually Transmitted Diseases in Women and Pregnancy
- 22. Sexual Assault and Sexually Transmitted Diseases
- 23. Non-Venereal Diseases of Genitalia
- 24. Premalignant and Malignant Lesions of Genitalia
- 25. Clinical Approach to Genital Ulcer Disease
- 26. Clinical Approach to Vaginal and Urethral Discharge
- 27. Critical Evaluation of Syndromic Management of Sexually Transmitted Diseases
- 28. Psychological aspects of venereal diseases
- 29. Venereal diseases and the public health

B) HIV / AIDS

- 1. Introduction
- 2. Epidemiology
- 3. Structure of the Virus
- 4. Pathogenesis
- 5. Clinical Features
 - i. Cutaneous Manifestations of HIV
 - ii. Systemic Manifestations of HIV
- 6. HIV & Sexually Transmitted Diseases
- 7. Stages of HIV (Progression from HIV to Full Blown AIDS)
- 8. Opportunistic Infections in AIDS
- 9. Laboratory Diagnosis
- 10. Markers of Disease Progression (CD4 + / CD8 + Counts)

- 11. Other Lab Tests
- 12. Treatment Anti-Retroviral Therapy
 - a. Introduction
 - b. Classification
 - c. Mechanism of action
 - d. Indications of HAART
 - e. Monitoring of patients
 - f. Side effects
- 13. National AIDS Control Programme
- ii) Clinical/Practical

Postgraduate students should do ward rounds everyday. Newly admitted patients should be worked up by them and presented to the teaching-staff the following day. They are also expected to work up patients in the out-patient department, take a proper clinical history, examine the patient, perform essential diagnostic/therapeutic procedures and order relevant tests and interpret them to arrive at a reasonable diagnosis.

- iii) Operative skills:
- A) Essential list of surgical/therapeutic procedures:
 - Local anaesthesia & nerve blocks, suture technique
 - Dermabrasion
 - Cautery chemical, electrical, radiofrequency
 - Punch grafting for Vitiligo
 - Suction blister grafting
 - Split skin thickness grafting
 - Nonculture melanocyte transfer technique
 - Phototherapy
 - Iontophoresis

- Comedone extraction
- Chemical peeling
- Molluscum and Milia extraction
- Botulinum toxin injection & fillers
- Nail & Acne surgery
- Long pulsed Nd Yag Laser; Q switched Nd Yag Laser
- Cryotherpy
- PUVA therapy, etc.
- B) Diagnostic procedures:
 - Skin biopsy for diagnostic purposes
 - Slit skin smears
 - KOH examination for fungal filaments
 - Wood's lamp examination
 - Tzanck smear,
 - Patch test
 - Autologous serum skin test for Chronic
 - Idiopathic urticaria
 - Dermatoscopy (Dermoscopy)
 - Trichoscopy
 - Trichogram etc.

NOTE:

1. Candidates are expected to be well versed in histopathology of all diseases.

IV. TEACHING AND LEARNING ACTIVITIES

A) Theoretical Teaching:

1. Lectures: Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.

- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.
- **3. Subject Seminar:** Recommended to be held once a week. All the PG 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 timetable for the subject with names of the students and the moderator should be announced in advance.
- 4. Case Discussion: Recommended to be held once a week. All the PG 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 timetable for the case presentation with names of the students should be announced in advance.
- 5. Ward Rounds: Ward rounds may be service or teaching rounds.
 - a) Service Rounds: Postgraduate students should do service rounds every day for the care of the patients. Newly admitted patients should be worked up by the post graduate student and presented to the faculty members the following day.
 - b) Teaching Rounds: Every unit should have 'grand rounds' for teaching purpose at the bed side. A diary should be maintained for day-to-day activities by the post-graduate students.

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

- 6. Clinico-Pathological Conference: Recommended once a month for all post graduate students. Presentation is 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 CPCs.
- 7. Inter Departmental Meetings: Strongly recommended particularly with departments of Pathology, Microbiology and Immunology at least once a month. These meetings should be attended by post-graduate students and relevant entries must be made in the Log Book.

Pathology: Interesting cases shall be chosen and presented by the postgraduate students and discussed by them as well as the senior staff of Pathology department. The staff of Pathology department would then show the slides and present the final diagnosis. In these sessions the advanced immunohistochemical techniques and other recent developments can be discussed.

Microbiology: Interesting cases shall be chosen and presented by the post-graduate students and discussed by them as well as the senior staff of Microbiology department. The staff of Microbiology department would then show the slides and present final diagnosis. In these sessions the advanced immunohistochemical techniques and other recent developments can be discussed.

Immunology: Interesting cases shall be chosen and presented by the postgraduate students and discussed by them as well as the senior staff of Immunology department. The staff of Immunology department would then discuss the cases with investigations and present final diagnosis. In these sessions the advanced immunohistochemical techniques and other recent developments can be discussed.

Radiology: Interesting X rays in relation to Dermatology, Venereology and Leprosy cases should be discussed.

- 8. Mortality Meeting: The mortality meeting should be conducted in the department every month. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records will be discussed in detail during this meeting.
- 9. **Teaching Skills:** Post-graduate students must teach under graduate students (eg. Medical, Nursing) by taking demonstrations, bedside clinics, tutorials, lecture, etc. Assessment is made using a checklist by medical faculty as well as by the students. Record of their participation is to be kept in the Log Book. Training of postgraduate students in Educational Science and Technology is recommended.
- 10. **Continuing Medical Education Programmes (CME):** Recommended that at least 1 state level CME programme should be attended by each student during the course.
- 11. **Conferences:** Attending conference is compulsory. Post-graduate student should attend one national and one state level conference during the course.

12. **Research Activities:** The Post-graduate students should be encouraged to carry out research activities in the department, institution and or community.

B) Clinical / Practical Training:

1. Rotational Postings in other Departments:

These are essential to acquire knowledge in allied subjects as applicable to Dermatology, Venereology and Leprosy. It is preferable to post students to:

- 1. General Medicine 2 weeks
- 2. Paediatrics 2 weeks
- 3. Psychiatry 2 weeks
- 4. Plastic Surgery 2 weeks
- 5. Leprosy hospital or National Leprosy control unit 4 weeks

V. OTHER CRITERIA TO BE FULFILLED FOR THE DEGREE COURSE

1. Internal evaluation:

During the course of three years, the department may conduct three tests, two of them conducted annually, one at the end of the first year and the other at the end of the second year. The third test may be held three months prior to the final examination. The tests may include written papers, practicals / clinicals and viva voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the University when called for.

Results of all evaluations should be entered into P.G's diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log book

Every candidate shall maintain a Log book/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. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures preformed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the University practical/clinical examination.

3. Dissertation:

Every candidate pursuing MD 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.

For details regarding DISSERTATION Refer 9.1 to 9.11 of Chapter-I.

VI. SCHEME OF EXAMINATION

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory and dissertation is accepted.

i) Theory: 400 Marks

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.

Type of questions	Number of questions	Marks for each question	Total marks
Long essay	02	20	40
Short essay	06	10	60
GRAND TOTAL			100

Details of the distribution of topics for each paper are as follows:

Paper I	Basic Sciences as applied to Dermatology, Venereology and Leprosy	100
Paper II	Dermatology	100
Paper III	Venereology & Leprosy	100
Paper IV	Dermatology in relation to Other Systemic Diseases, Dermato-therapeutics, Dermato-surgery and Recent Advances in Dermatology, Venereology & Leprosy	100

Note: The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

ii) Clinical / Practical Examination: 300 Marks

To elicit competence in clinical skills and to discuss differential diagnosis and therapeutic aspects.

Type of cases

1 Long case (Dermatology)	100
2 Short cases (1 each of STD/HIV	50
And Leprosy)	50
10 Spotters (Varieties of cases included)	100

iii) Viva Voce Examination: 100 Marks

1) Viva-Voce Examination:

(80 Marks)

Candidates will be examined by all examiners for comprehension, analytical approach, expression and interpretation of data. It includes all components of the course contents. In addition, candidates may also be given case reports, gross specimens, pathology slides, instruments, X-rays, etc for interpretation.

2) Pedagogy Exercise and Log Book: (20 Marks)

(i) Candidate is asked to make a presentation for 8-10 minutes either on the topic of dissertation or any other topic, provided 48 hours advance intimation is given to the candidate.

Review of Log Book.

iv) Table showing maximum marks:

Maximum Marks for	Theory	Practical	Viva	Grand Total
M.D. Dermatology, Venereology and Leprosy	400	300	100	800

SI. No.	Name of the book	Names of the editors	Publisher
1	Rook's Textbook of Dermatology – 4 vol.	Burns, Breathnach, Cox, Griffiths	Blackwell Science
2	Fitzpatrick's Dermatology in General Medicine – 2 vol.	Goldsmith,Katz, Gilchrest,Paller, Leffell, Wolff	McGraw Hill Publications
3	Dermatology – 2 vol.	Moschella, Hurley	W.B.Saunders Company
4	Lever's Histopathology of the Skin	Elder,Elenistsas, Johnson	Lippinocott-Raven
5	Dermatology – 2 vol.	Jean L. Bolognia, Jorrizzo, Rapini	Mosby Publication
6	IADVL Text Book and Atlas of Dermatology – 2 vol.	Valia, Valia, Siddappa	Bhalani Publishing House
7	Andrew's Diseases of the Skin-Clinical Dermatology	Elston, James, Berger,	W.B.Saunders, Elsevier
8	Text Book & Atlas of Dermato-Surgery & Cosmetology	Satish S. Savant, Radha Atal-Shah, Deepak Gore	Association of Scientific Cosmetologists and Dermatosurgeons
9	Skin Disease: Diagnosis and Treatment	Thomas P. Habif	Mosby Publication
10	Clinical Dermatology	Habif	Mosby Publication
11	Leprosy	Hastings	Churchill Livingstone
12	Leprosy	Dharmendra	Samant & Company
13	Leprosy	Bryceson, Roy & Pfaltzgraff	Churchill Livingstone
14	Handbook of Leprosy	Jopling, Mc Dougall	CBS Publishers & distributors
15	Sexually Transmitted Diseases	Holmes, Sparling, etc V.K. Sharma	McGraw Hill Publications
16	Venereal Diseases	King, Nicol	ELBS
17	Sexually Transmitted Infections	Bhushan Kumar, Gupta	Elsevier
18	Comprehensive Dermatological Drug Therapy	Wolvorten	Elsevier

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

VIII. RECOMMENDED JOURNALS:

SI. No.	Name of the journal
1	Archives of Dermatology
2	British Journal of Dermatology
3	Dermatology
4	Indian Journal of Dermatology, Venereology & Leprosy
5	International Journal of Dermatology
6	Journal of American Academy of Dermatology
7	Journal of Investigative Dermatology
8	Dermatology Clinics of North America
9	Genitourinary Medicine
10	Sexually Transmitted Infections (British)
11	Indian Journal of Leprosy
12	International Journal of Leprosy
13	Leprosy Review

POST GRADUATE DEGREE COURSE M.D. IN GENERAL MEDICINE

I. GOALS:

The ultimate culmination of a post-graduate training program in medicine is the capacity of the post-graduate specialist to cater effectively and competently to the health needs of the community, while being aware of the latest advances in the pertinent field. Moreover, the specialist should possess knowledge of basic teaching skills, principles of research methodology and methods of acquisition of information.

II. OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the following subheadings

- 1. Knowledge
- 2. Skills
- 3. Human values, ethical practice and communication abilities.

1. Knowledge:

The Post-graduate will be taught to:

- Describe etiology, pathophysiology, principles of diagnosis and management, differential diagnosis and prognosis of common problems including emergencies, encountered in day-to-day practice.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning therapeutic measures.
- Recognize conditions of other specialities and to gain the ability to refer to an appropriate specialist.
- Be able to co-ordinate management with other specialities, to work as a team in the best interest of the patient and also to demonstrate understanding of basic sciences relevant to this speciality.
- Update himself/herself by using evidence based medicine and also by attending courses, conferences and seminars relevant to this speciality.

2. Skills:

- To take proper history, elicit and interpret physical signs and come to diagnosis.
- To perform essential bed- side routine diagnostic procedures / investigations.
- To order relevant and appropriate tests which assist or are useful for diagnosis and to interpret them to reach reasonable diagnosis.
- To acquire the basic knowledge to perform common procedures like pleural and ascitic fluid aspiration lumbar puncture, liver biopsy, kidney biopsy, bone marrow aspiration, gastric lavage, securing an I.V. line, catheterization, ICD and basic life saving procedures in emergency situations like CPR, intubation, and accessing central line.
- To learn the basic methodology of teaching and develop competence in teaching medical/paramedical students.

3. Human values, Ethical practice and Communication abilities:

- Adopt ethical principles in all aspects of his/her practice; professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- 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 patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS:

1. BASIC SCIENCES

The student is expected to know the fundamental applied aspects of Anatomy, Physiology, Biochemistry, Pathology, Microbiology and Pharmacology.

2. INTRODUCTION TO CLINICAL MEDICINE:

The practice of clinical medicine consists of eliciting relevant history in detail, followed by detailed physical examination of various systems and makes a clinical diagnosis. Following this the student should be able to order relevant diagnostic tests based on history, clinical examination and also keeping in mind the socioeconomic status of the patient, further the student should be able to effectively communication with the patient and relatives about treatment and prognosis, which includes compassionate explanation and emotional support to the suffering patient and his family.

Principles Of Evidence Based Medicine

The modern practice of clinical medicine should follow principles of Evidence Based Medicine, which incorporates the review of literature, evidence from textbooks, reference books and original articles from Indexed Journals. This should also include understanding of Randomized Controlled Trials and Blinded Clinical Trials. The student is also expected to be aware of the use of computers in medicine. Student should also know application of various statistical methods in the field of medical research.

3. CARDINAL MANIFESTATIONS OF DISEASES

PAIN

- Pain pathophysiology and management
- Chest discomfort and palpitations
- Abdominal pain
- Headache including migraine and cluster headache
- Back and Neck pain

ALTERATIONS IN BODY TEMPERATURE

- Fever and hyperthermia
- Fever and Rash
- Fever of unknown origin
- Hypothermia and frostbite

ALTERATIONS OF CARDIO-RESPIRATORY SYSTEM

- Chest pain
- Palpitations
- Breathlessness
- Edema
- Syncope
- Cough and hemoptysis

ALTERATIONS OF THE LOCOMOTOR SYSTEM

- Approach to Joint pain
- Back pain

NERVOUS SYSTEM DYSFUNCTION

- Faintness, syncope, dizziness and vertigo
- Weakness, myalgias, disorders of movement and imbalance
- Numbness, Tingling and Sensory Loss
- Acute Confusional State and Coma
- Aphasias and other focal cerebral disorders
- Memory loss and dementia
- Sleep disorders

DISORDERS OF THE EYES, EARS, NOSE AND THROAT

- Disorders of the eye, smell, taste and hearing
- Infections of the upper respiratory tract
- Oral manifestations of systemic diseases.

ALTERATIONS IN GASTROINTESTINAL SYSTEM

- Dysphagia
- Nausea, vomiting and indigestion
- Diarrhea and constipation

- Gain and loss in weight
- Gastrointestinal bleeding
- Jaundice
- Abdominal swelling, ascites.
- Anasarca

ALTERATIONS IN URINARY FUNCTION AND ELECTROLYTES

- Cardinal manifestations of renal disease.
- Incontinence and lower urinary tract symptoms.
- Fluid and Electrolyte disturbances.
- Acidosis and alkalosis.

ALTERATIONS IN THE UROGENITAL TRACT

- Erectile dysfunction.
- Disturbances of menstruation and other common gynecological complaints in women hirsutism and virilization.
- Infertility and fertility control.

ALTERATIONS IN THE SKIN

- Approach to the patient with skin disorders.
- Eczema, psoriasis, cutaneous infections, acne and other common skin disorders.
- Cutaneous drug reactions.
- Skin manifestations of internal diseases.
- Photosensitivity and other reactions to light.
- Immunologically mediated skin diseases.

HEMATOLOGIC ALTERATIONS

- Anemia and polycythemia
- Bleeding and thrombosis

- Spleen/Approach to patient withGeneralized Lymphadenopathy
- Disorders of granulocytes and monocytes

4.GENETICS AND DISEASES

- Principles of human genetics
- Chromosome disorders
- Diseases caused by genetic defects of mitochondria
- Screening, counseling and prevention of genetic disorders
- Gene therapy –
- Human genome project, stem cell therapy and gene transfer in clinical medicine./
- Pharmacogenomic

5. CLINICAL PHARMACOLOGY

- Basic consideration of clinical pharmacology
- Benefit and harm in drug therapy
- Pharmacodynamics
- Adverse drug reactions
- Drug interactions
- Drug nomenclature
- Monitoring drug therapy
- New drug delivery systems
- Evidence-based medicine in drug therapy.

6. NUTRITION

- Basic Considerations of Nutrition.
- Assessment of Nutritional Status.
- Vitamin and Trace Mineral Deficiency and Excess.
- Enteral and Parenteral Nutrition Therapy.

- Protein Energy Malnutrition.
- Free Radicals and Antioxidants.
- Malnutrition in the hospital population.
- Biology of obesity.
- Evalution and Management of obesity.
- Eating disorders.

7. ONCOLOGY AND HEMATOLOGY

- Approach to the patient with cancer
- Prevention and early detection of cancer
- Cancer genetics
- Cancer cell biology and angiogenesis
- Principles of cancer treatment
- Infection in patients with cancer
- Cancer of skin
- Head and neck cancer
- Neoplasms of the lung
- Breast cancer
- Gastrointestinal tract cancer
- Tumors of the liver and biliary tree
- Pancreatic cancer
- Bladder and renal cell carcinoma
- Benign and malignant diseases of the prostate
- Testicular cancers
- Gynecological malignancies
- Soft tissue and bone sarcomas and bone metastasis
- Carcinoma of unknown primary

- Paraneosplastic syndromes
- Thymoma
- Late consequences of cancer and its treatment
- Oncologic emergencies

DISORDERS OF HEMATOPOIESIS

- Iron deficiency and other hypoproliferative Anemias
- Disorders of Hemoglobin
- Megaloblastic Anemia
- Hemolytic anemia and anemia due to acute blood loss
- Aplastic anemia, Myelodysplasia and Related bone marrow failure syndromes
- Polycythemia vera and other Myeloproliferative diseases
- Acute and Chronic myeloid leukemia
- Malignancies of lymphoid cells
- Plasma cell disorders
- Transfusion biology and therapy
- Hematopoietic cell transplantation

DISORDERS OF HEMOSTASIS

- Disorders of platelet and vessel wall
- Coagulation disorders
- Venous thrombosis
- Antiplatlet, Anticoagulant and Fibrinolytic drugs

8. INFECTIOUS DISEASES

BASIC CONSIDERATIONS IN INFECTIOUS DISEASES

Introduction to infectious diseases: host parasite interaction, diagnostic techniques, immunization principles and vaccine usage, overview of common community and nosocomial infectious syndromes, approach to acutely ill febrile patient.

BACTERIAL INFECTIONS

Introduction:

Bacterial Genetics, Pathogenesis, Treatment and Prophylaxis, Sterilization, Antibiotic Resistance, Bioterrorism.

Diseases caused by Gram- Positive Bacteria:

Staphylococcus, Streptococcus, Pneumococcus, Corynebacteria, Bacillus anthracis, Bacillus cereus, Clostridium Species-Gas Gangrene and Food Poisoning, Actinomycosis, Nocardiosis, Listeria.

Diseases caused by Gram- negative Bacteria:

Meningococci, Gonococci, Moraxella, Salmonella, Shigella, Proteus,Pseudomonas,Campylobacter, Helicobacter, Yersinia, Haemophilus, Bordetella, Brucella, Legionella, Bartonella, Klebsiella. Mycoplasma, Chlamydia.-Rickettsia and Coxiella. Vibrio cholera and other vibriose.

• Spirochaetal diseases:

Syphilis, Relapsing Fever, Lyme's disease and Leptospirosis.

Mycobacterial Infections:

Pulmonary & Extrapulmonary Tuberculosis, Leprosy, Atypical mycobacterial infections.

VIRAL INFECTIONS

Introduction:

Classification, viral genetics, diagnostic modalities and antiviral therapy.

Diseases caused by the DNA virus:

Smallpox, Chickenpox, Orf, Molluscum contagiosum, Herpes simplex, Varicella zoster, Herpes zoster, CMV, EBV, Adenovirus and Hepatitis B virus.

Diseases caused by RNA virus:

Enterovirus- including Poliovirus, Coxsackie virus, Echovirus, Rhinovirus. **Influenza virus**, Mumps virus, Parainfluenza virus, Respiratory syncytial virus, Rubeola. **Arbovirus** including- Chikungunya, Japanese encephalitis, Yellow fever, Dengue virus, Kyasanur forest disease, Hantan virus, Chandipura virus. Rabies virus, Hepatitis A. C. D, E,F and G, Arenavirus, Ebola fever, Coronavirus, Rotavirus,Zika virus

- Oncogenic viruses:
 - Viruses with oncogenic potential, mechanism of oncogenicity

HIV AND AIDS

- Epidemiology, genetics, pathogenicity, Indian perspective, clinical features, lab diagnosis, Treatment, *Drug Resistance* and Prevention
- Miscellaneous:

Co-infection of various viral diseases, immunization and chemoprophylaxis, Viruses in gene therapy

PROTOZOAL INFECTION

Introduction:

General introduction, modes of transmission, lab diagnosis, antiprotozoal drugs

Diseases caused by Ameba

Entamoeba histolytica, Primary amoebic meningoencephalitis.

Diseases caused by Zoomastigotes:

Intestinal, Oral, Vaginal, Blood and tissue flagellates.

Diseases caused by Sporozoa:

Isospora, Plasmodium, Toxoplasma.

HELMINTHIC INFECTION

Introduction:

General introduction, modes of spread, diagnostic procedures and antihelminthic drugs

Diseases caused by Cestodes:

Taenia, Echinococcus, Hymenolepis, Diphyllobothrium,

• Diseases caused by Trematodes:

Intestinal, Hepatic, Lung and blood trematodes

• Diseases caused by Nematodes:

Strongyloides, Ankylostoma, Necator, Angiostrongylus, Enterobius, Ascaria, Wuchereria, Brugia, Onchocerca, Monsonella, Loa, Dracunculosis, Gnathostoma.

FUNGAL INFECTIONS

• General Introduction, Diagnostic Modalities And Treatment Options; Fungal infections in the immunocompromised; Diseases caused by Histoplasmosis, Coccidiodomycosis, Blastomycosis, Cryptcoccosis, Candidiasis, Aspergillosis, Mucormycosis, Pneumocystis Infection.

9. DISORDERS OF THE CARDIOVASCULAR SYSTEM

DIAGNOSIS OF CARDIOVASCULAR DISORDERS

- Essential Anatomy, Physiology and Embryology of the heart.
- Approach to the patient with Cardiovascular diseases
- Physical examination of the Cardiovascular system
- Relevant investigations for the diagnosis of cardiac diseases:

NON INVASIVE - Chest radiography, ECG, Echocardiography, Stress Test, Nuclear

Imaging,PET, CT, MRI

INVASIVE-Diagnostic cardiac catheterization and coronary angiography,

Electrophysiological studies, Intravasuclar Endoscopy

DISORDERS OF RHYTHM

- Bradyarrhythmias- Disorders of Sinus node function and AV conduction disturbances
- Tachyarrhythmias- Premature complexes, atrial tachycardia, Atrial flutter, atrial fibrillation, Supraventricular, Junctional and Ventricular tachyarrhythmias.

DISORDERS OF THE HEART

- Heart failure and CorPulmonale
- Valvular Heart Disease
- Infective endocarditis
- Cardiomyopathy and Myocarditis
- Pericardial disease
- Congenital heart disease in the adult
- Cardiac tumors, Cardiac manifestations of systemic diseases and Traumatic cardiac injury
- Pulmonary Hypertension
- Cardiac Transplantation and Prolonged assisted circulation
- Heart disease in the elderly
- Cardiac patient and surgery
- Cardiac disorder in pregnancy/
- Therapeutic procedures- BLS, ALS, Defibrillation, Cardiac pacing, Pericardiocentesis, Intraaortic balloon pumping, **3**rd **Generations Stents**
- Devices in Cardiac disorder
- Newer Investigation for diagnosis of Rhythm Abnormalities: External Loop Records Internal Loop

VASCULAR DISEASE

- Atherosclerosis- Pathogenesis, clinical manifestations, prevention and treatment of atherosclerosis.
- Ischemic Heart Diseases- Stable angina pectoris, Unstable angina pectoris, Acute myocardial infarction. The student is expected to know about Percutaneous revascularization procedures and CABG.
- Systemic Hypertension
- Diseases of the Aorta
- Vascular diseases of the extremities
10. DISORDERS OF THE RESPIRATORY SYSTEM

- Applied aspects of respiratory anatomy and respiratory physiology.
- Approach to the patient with disease of respiratory system.
- Disturbances in respiratory function.
- Diagnostic procedures in respiratory diseases.
- Asthma, Tropical pulmonary eosinophilia, Hypersensitivity pneumonitis
- Environmental lung diseases.
- Chronic bronchitis, emphysema and airways obstruction.
- Small airways Disease
- Interstitial lung diseases.
- Smoking and air pollution.
- Mycobacterial Diseases Diagnostic methods, pathogenesis, clinical manifestation and treatment. National programme on Tuberculosis including DOTS.
- Pneumonitis, Pneumonia.
- Pulmonary manifestation of HIV infection.
- Lung abscess, bronchiectasis, cystic fibrosis.
- Pulmonary thromboembolism.
- Disorders of pleura, mediastinum and diaphragm.
- Disorders of ventilation.
- Sleep apnea.
- ARDS.
- Mechanical ventilatory support.
- Intrathoracic malignancies.
- Lung transplantation.
- Surgical approach to lung disease.

11. CRITICAL CARE MEDICINE

- Principles of Critical care medicine.
- Approach to the patient in critical care setting.
- Acute Respiratory Failure.
- Ventilator management in the Intensive Care Unit.
- Approach to patient with shock.
- Cardiogenic shock and pulmonary edema./Advanced Cardiac life support
- Severe sepsis and septic shock.
- Neurological critical care.
- Non Invasive positive pressure Ventilation
- Care of Terminally ill Patients

12. DISORDERS OF THE KIDNEY AND URINARY TRACT

- Structure and function of the kidneys.
- Fluid and electrolytes.
- Acid base disorders.
- Approach to the patients with kidney disease.
- Acute renal failure.
- Chronic renal failure.
- Glomerular diseases.
- Tubular disorders.
- Tubulointerstitial diseases of the kidney.
- Vascular disorders of the kidney.
- Cystic renal disease.
- Nephrolithiasis.
- Urinary tract infection .

- Urinary tract obstruction.
- Drugs and kidney.
- Tumors of the kidneys and genitourinary tract.
- Diseases of prostate gland.
- Renal transplantation.

13. DISORDERS OF THE GASTROINTESTINAL SYSTEM DISORDERS OF THE ALIMENTARY TRACT

- Approach to the patient with gastrointestinal diseases
- Gastrointestinal endoscopy procedures
- Diseases of the esophagus
- Peptic ulcer and related disorders
- Disorders of absorption and digestion
- Inflammatory bowel diseases
- Irritable bowel syndrome
- Common diseases of the colon
- Mesenteric vascular insufficiency
- Acute intestinal obstruction
- Acute appendicitis and peritonitis

LIVER AND BILIARY TRACT DISEASES

- Approach to the patient with liver diseases
- Evaluation of liver functions
- Imaging in Hepatobiliary Disorders
- Hyperbilirubinemia
- Acute viral hepatitis
- Chronic hepatitis
- Alcoholic liver disease

- Toxic and drug induced hepatitis
- Non-alcoholic steatohepatitis
- Cirrhosis and its complications
- Non-cirrhotic portal hypertension
- Liver abscess
- Infiltrative, Genetic and Metabolic diseases affecting liver
- Liver diseases in pregnancy
- Liver in Systemic Disease
- Veno- occlusive diseases of liver
- Liver tumours
- Liver transplantation
- Diseases of the gall bladder and bile ducts

DISORDERS OF THE PANCREAS

- Approach to the patient with pancreatic diseases
- Acute pancreatitis
- Chronic pancreatitis
- Neuroendocrine tumours of the pancreas
- Pancreatic malignancy

14. DISORDERS OF THE IMMUNE SYSTEM, CONNECTIVE TISSUE AND JOINTS

DISORDERS OF THE IMMUNE SYSTEM

- Introduction to the immune system
- The major histocompatibility gene complex
- Primary immune deficiency diseases
- Human immunodeficiency virus disease

DISORDERS OF IMMUNE – MEDIATED INJURY

- Allergies and Anaphylaxis
- Systemic lupus erythematosus
- Rheumatoid arthritis
- Scleroderma- diffuse and limited
- Sjogren's syndrome
- Ankylosing spondylitis, reactive arthritis, psoriatic arthritis and undifferentiated spondyloarthropathy
- Behcet's syndrome
- Vasculitis syndromes- Polyarteritis nodosa, Wegener's granulomatosus, Takayasu's arteritis, Henoch – Schonlein purpura, Churg- Strauss syndrome, Giant Cell arteritis, Kawasaki disease, Drug induced vasculitis
- Sarcoidosis
- Amyloidosis
- Emergencies in Rheumatology
- Rheumatic Manifestation of systemic Disease

DISORDERS OF THE JOINTS

- Approach to Articular and Musculoskeletal disorders
- Osteoarthritis
- Gout and other Crystal Arthropathies
- Infectious arthritis
- Relapsing polychondritis
- Periarticular disorders of the Extremities

15. ENDOCRINOLOGY AND METABOLISM

ENDOCRINOLOGY

- Principles of endocrinology
- Chronobiology and neuroendocrinology and the neuroendocrine system.

- Anterior pituitary (disorders of anterior pituitary and hypothalamus).
- Posterior pituitary (disorders of neurohypophysis).
- Disorders of thyroid gland
- Disorders of adrenal cortex
- Disorders of adrenal medulla, catecholamines and pheochromocytoma.
- Diabetes mellitus
- Hypoglycemia/ pancreatic islet cell disorders
- Disorders affecting multiple endocrine system (polyglandular disorders).
- Disorders of the testis and male sexual function.
- Disorders of the ovary and female reproductive tract.
- Disorders affecting multiple endocrine system.
- Heart as an endocrine system
- Endocrine disorders of the breast.

DISORDERS OF INTERMEDIARY METABOLISM

- Disorders of lipoprotein metabolism.
- Wilson's disease
- Lysosomal storage diseases
- Hemochromatosis
- Porphyrias
- Disorders of purine and pyrimidine metabolism
- Homocystinuria
- Glycogen storage diseases and other inherited disorders of carbohydrate metabolism
- Inherited disorders of connective tissue
- Inherited disorders of amino acid metabolism.
- Lipodystrophies

DISORDERS OF BONE AND MINERAL METABOLISM

- Introduction to bone and mineral metabolism
- Diseases of parathyroid gland and other hypercalcemic and hypocalcemic disorders
- Osteoporosis
- Osteomalacia and rickets
- Disorders of bone Paget's disease of bone, osteosclerosis/ osteonecrosis.

16. NEUROLOGICAL DISORDERS

DIAGNOSIS OF NEUROLOGIC DISORDERS

- Neurobiology of diseases
- Approach to the patient with neurologic diseases
- Electrophysiological studies of the central and peripheral nervous system
- Neuroimaging in neurologic disorders
- Neurogenetics (molecular diagnosis)

DISEASES OF THE CENTRAL NERVOUS SYSTEM

- Seizures and epilepsy
- Cerebrovascular diseases
- Alzheimer's disease and other dementias
- Parkinson's diseases and other extrapyramidal disorders
- Ataxic disorders
- Motor neuron diseases
- Disorders of cranial nerves
- Disorders of the autonomic nervous system
- Disorders of the spinal cord
- Traumatic lesions of the head and spine
- Primary and metastatic tumours of the nervous system

- Multiple sclerosis and other demyelinating conditions of the central nervous system
- Viral meningitis and encephalitis
- Bacterial meningitis and other suppurative meningitis
- Chronic and recurrent meningitis
- Prion diseases
- Critical care neurology

DISORDERS OF THE NERVE AND MUSCLE

- Approach to the patient with peripheral neuropathy
- Guillain-Barre syndrome and other Immune mediated neuropathies
- Inherited neuropathies
- Myasthenia Gravis and other diseases of the neuromuscular junction
- Approach to the patient with muscle disease
- Polymyositis, Dermatomyositis and Inclusion Body myositis
- Muscular dystrophies and other muscle diseases.
- Chronic fatigue syndrome

17. PSYCHIATRIC DISORDERS

- Introduction to Psychiatry Psychiatric history taking and clinical examination including the mental state examination
- Classification of psychiatric disorders
- Psychiatric aspects of physical diseases
- Mood (Affective) disorders depressive disorders, mania and hypomania
- Suicide and attempted suicide
- Anxiety disorders obsessive compulsive disorders, general anxiety disorders, panic disorder
- Schizophrenia
- Organic mental disorders

- Eating disorders anorexia nervosa, bulimia nervosa
- Sexual disorders
- Personality disorders
- Psychiatry and the law
- Lithium poisoning
- Psychotherapies in Mental Health

ALCOHOLISM AND DRUG DEPENDENCY

- Biology of addiction
- Alcohol and Alcoholism
- Nicotine Addiction
- Opioid Drug abuse and Dependence
- Cocaine and other commonly abused drugs

18. ENVIRONMENTAL AND OCCUPATIONAL HAZARDS

- Illnesses due to Poisons, Drug Over dosage and Envenomation
- Disorders caused by reptile bites and marine animal envenomations ectoparasite infestations and arthropod bites and stings
- Specific Environmental and Occupational Hazards
- Drowning and near drowning
- Electrical injuries
- Radiation injury
- Heavy metal poisoning
- Acclimitazation disorders
- Disaster management
- Bioterrorism

19. Ageing and disease

• Comprehensive geriatric assessment

- Biology of ageing
- Physiological Changes of ageing
- Presenting problems in geriatric medicine Falls, Urinary incontinence, Delirium, Adverse drug reaction
- Rehabilatation

20 .RECENT ADVANCES

Student is expected to keep himself abreast of recent advances in various fields of medicine especially in diagnostic and therapeutic aspects of various diseases. Some of these advances are – electrophysiology of the heart, various ablation techniques in the treatment of cardiac arrhythymias, resynchronization therapy, ERCP, capsule endoscopy, bronchoscopy, stenting, interventional neurological techniques, gene therapy, organ transplantation, stem cell therapy.

21. RADIO DIAGNOSIS

General: The importance and scope of different radiological examinations in the diagnosis, treatment and management of various diseases.

Convectional Radiology

- Ultrasound inmedicine, Doppler Imaging
- Computed Tomography
- MagneticResonance Imaging
- NuclearImaging .PECT/ PEMRI

22. Miscellaneous

- Adult Immunization
- Preoperative Management

NOTE: The list of topics given are general guidelines. They are neither comprehensive nor all inclusive.

IV. TEACHING AND LEARNING ACTIVITIES:

A. Theoretical Teaching:

1. Lectures: Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.

- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.
- 3. Subject Seminar: Recommended to be held once a week. All the PG 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 timetable for the subject with names of the students and the moderator should be announced in advance.
- **4. Group Discussion**: Selected topics for group discussion are given to all PG students and All the PG 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 timetable for the case presentation with names of the students should be announced in advance.
- 5. Case Discussion: Recommended to be held once a week. All the PG 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 timetable for the case presentation with names of the students should be announced in advance.
- 6. Ward Rounds: Ward rounds may be service or teaching rounds.

a) Service Rounds: Postgraduate students should do service rounds every day for the care of the patients. Newly admitted patients should be worked up by the post graduate student and presented to the faculty members the following day.

b) Teaching Rounds: Every unit should have 'grand rounds' for teaching purpose at the bed side. A diary should be maintained for day-to-day activities by the post-graduate students.

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

7. Clinico-Pathological Conference: 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 CPCs.

8. Inter Departmental Meetings: Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a month. These meetings should be attended by post-graduate students and relevant entries must be made in the Log Book.

Pathology: Interesting cases shall be chosen and presented by the post-graduate students and discussed by them as well as the senior staff of Pathology department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advanced immuno-histo-chemical techniques, the burgeoning markers, other recent developments can be discussed.Radio-diagnosis: Interesting cases and the imaging modalities should be discussed. Emphasis should be given for the radiological differential diagnosis.

- **9. Mortality Meeting:** The mortality meeting should be conducted in the department every month. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records will be discussed in detail during this meeting.
- **10. Teaching Skills:** Post-graduate students must teach under graduate students (eg. Medical, Nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc.Basic skill lab training for post graduates. Assessment is made using a checklist by medical faculty as well as by the students. Record of their participation is to be kept in Log Book. Training of postgraduate students in Educational Science and Technology is recommended.
- **11. Continuing Medical Education (CME):** Recommended that at least 1 state level CME programmes should be attended by each student during the course.
- **12. Conferences:**Post-graduate student present at least one research paper and one poster in state or national or international conference.
- **13. Publication:** The Post-graduate students should publish at least one research paper in national or international level in index, print version medicine journal.

B) Clinical / Practical Training:

Following is the clinical training of the postgraduate students for three years period.

- I. A major of tenure of posting should be in internal medicine. It should include care of in- patient, out-patient, speciality clinics and maintenance of case records for both in-and out patient.
- II. Exposure to the following areas must be done.

SL.	Department	Duration
No		
1.	Medical ICU	One Month. 25 Days
2	Trauma Centre and Emergency Medical Services	One Month. 25 days
	ICCU	
	Neurology	
	Nephrology	
	Oncology /Gastroenterology	
	Rural Posting [Ankola	
	Psychiatry / Chest & TB / Dermatology	

III. Rotation of Posting

Inter-Unit rotation in the Department is done for period of one year [divided during the first year), Second Year P.G. Rotation Posting for super-specialty department for one year and in third year candidate stay in the parent unit.

V. OTHER CRITERIA TO BE FULFILLED FOR THE DEGREE COURSE:

1. Internal evaluation:

During the course of three years, the department will conduct two tests. Two of them will be annual, one at the end of first year and other at the end of second year. The third test will be a preliminary examination which may be held three months before the final examination conducted by college similar to final university examination. The test may include the written papers, practicals / clinicals and vivavoce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the University when called for.

Results of all evaluations should be entered into P.G's diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/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, conducted by the candidate. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures performed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution and presented in the University practical/clinical examination.

3. Dissertation:

Every candidate pursuing MD 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.

For details regarding DISSERTATION Refer 9.1 to 9.11 of Chapter-I.

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory and dissertation is accepted.

A. Theory: 400 Marks

There shall be four papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No. of Questions	Marks for each question	Total Marks
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper I Basic Sciences, Recent Advances in Medicine, Nutrition, and Clinical Pharmacology.Emergency and Critical care Medicine, Geriatric Medicine.

- Paper II Cardiovascular system, Gastro Intestinal system, Hepatobiliary, Pancreatic disorders, Infectious diseases including Tropical Medicine
- Paper III Central Nervous system, Respiratory system, Immune system, Connective tissue and joint disorders.

Paper IV Nephrology, Endocrinology & Metabolism, Hematology, Oncology, Dermatology and Psychiatry, Poisoning, environmental and Occupational hazards.

Note: The distributions of chapters/topics shown against the papers are suggestive only and may overlap or change.

B. Clinical / Practical Examination:

300 Marks

To elicit competence in clinical skills and to discuss differential diagnostic and therapeutic aspects.

Practical & Viva Voce Examination of M.D. General Medicine, details of Marks Distribution

SI. No.	Long Case	Short	Case	Spotters (5)	Pedagogy	Grand Total	Vice-Voce
	100 Marks	50 Marks	50 Marks	50 Marks 10. Marks Each	50 Marks	300	100

C. Viva- Voce Examination: 100 Marks

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills.

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 given case reports, spirometry, ABG, gross specimens, histo-pathology slides, X-rays, ultrasound, CT scan images, PFT report, ventilation-perfusion scan images, etc .for interpretation and questions on these as well as use of instruments will be asked. Student's knowledge on use of instruments and drugs will also be evaluated during viva-voce examination. It includes discussion on dissertation also.

2) Pedagogy Exercise and Log Book – [20 Marks]

Candidate is asked to make a presentation for 8 – 10 minutes on a topic given in advance with the consent of external examiner or to make a presentation on the dissertation topic and the review of Log Book.

D. Maximum Marks:

Maximum marks for M.D.	Theory	Practical	Viva	Grand Total
(General Medicine)	400	300	100	800

VII. RECOMMENDED BOOKS (LATEST EDATION)

I. Clinical Methods (Latest Edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	Clinical Methods	Hutchison	W. B. Saunders
2	Symptoms and Signs in Clinical Medicine	Chamberlain	Butterworth Heinemann
3	Clinical Examination	Mcleod's	Elsevier
4	Neurological Examination in Clinical Practice	Bicker staff	Blackwell Science
5	Bedside Cardiology	Jules Consant	Little, Brown & Company
6	The Neurologic Examination	De'jong	Jaypee& Lippincott Williams & Wilkins

II. General Medicine (Latest Edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	Principles of Internal Medicine	Harrison	McGraw Hill
2	Textbook of Medicine	API	API Mumbai
3	Textbook of Medicine	Cecil	W. B. Saunders
4	Textbook of Medicine	D. J. Weatherallledingham	Oxford University Press
5	Principles & Practice of Medicine	Davidson	Churchill Livingstone
6	Current Medical Diagnosis and Treatment,	Lawrence M. Tierney	McGraw Hill
7	Clinical Medicine	Praveen Kumar Micheal Clark	Elsevoer W. B. Saunders

III. Cardiology (Latest Edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	The Clinical Recognition of	Josph K. Perloff	W. B. Saunders
	Congenital Heart Diseases		
2	An introduction to	Leo Schamroth	Black Well Science
Ζ	Electrocardiography		
2	Practical	Galen S. Wagner	Lippincott Williams &
3	Electrocardiography		Wilkins (LWW)
4	Heart Disease	Eugene Braunwald	W. B. Saunders
5	The Heart	Hurst	McGraw Hill
6	Congenital Heart Disease in Adults	Perloff Child	W. B. Saunders

IV. NEUROLOGY (LATEST EDITION)

SI. No.	Name of the Textbook	Authors	Publisher	
1	Principles of Neurology	Adam's Victor &Ropper A. H.	Mc Graw Hill	
2	Neurology in Clinical	Bradley W. G. Daroff R.	Butterworth Heinenann	
2	Practice	В.	(BH) publications	
2	Neurological Differential	John Patton Waltor	Springer	
5	Diagnosis		Springer	
4	Diseases of the Nervous	Walton & Donaghy	Oxford University Press	
4	System		Oxioid University Fless	
5	Brains Diseases of Nervous	Michael Donaghy	Ovford University Press	
	System		Child Oniversity Fless	

V. Gastro-enterology (Latest Edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	Current Diagnosis and Treatment in Gastroenterology	Freedman S. L.	Lange Medical Publication
2	Diseases of Liver and Biliary System	Sheila Sherlock	Blackwell Sciences
3	Gastrointestinal and Liver Disease	Sleissenger&Fordtran's	W. B. Saunders
4	Diseases of the Liver	Schiff	Lippincott Williams & Wilkins (LWW)

VI. Nephrology (Latest Edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	The Kidney	Brenner & Rector's	W. B. Saunders
2	Diseases of the Kidney & Urinary Tract	Robert W. Schrier	Lippincott Williams & Wilkins (1 W/W/)
3	Textbook of Nephrology	Massry &Glassock	Williams & Wilkins

VII. Hematology (Latest Edition)

Sl. No.	Name of the Textbook	Authors	Publisher
1	Clinical Hematology	Wintrobe	Williams & Wilkins

VIII. Respiratory	/ Medicine/	Critical Care	Medicine	(Latest Edition)
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SI. No.	Name of the Textbook	Authors	Publisher
1	Chest Medicine Essentials of	Ronald George	Williams & Wilkins
	Pulmonary and Critical Medicine		
2	Manual of Intensive Care	Irwin and Rippe	Lippincott Williams &
	Medicine		Wilkins (LWW)
3	Textbook of Respiratory Diseases	Crofton & Douglas	PG Publication
			Company

IX. Geriatrics/Gerontology (Latest Edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	Geriatric Medicine for students	Brocklehurst	Churchill Livingstone
2	Oxford Textbook of Geriatric	Evans	McGraw Hill
	Medicine		

X. Oncology (Latest Edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	Cancer Principles and Practice of Oncology	Devita V. T.	Lippincott Williams & Wilkins (LWW)

XI. ENDOCRINOLOGY (latest edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	Williams Text book of Endocrinology	Henry.MKronenberg	Elsevier

Reference Books (Latest Edition) Anatomy/ Physiology/ Biochemistry/ Biostatistics (Latest Edition)

SI. No.	Name of the Textbook	Authors	Publisher
1	Clinical Neuroanatomy	Richards Snell	Lippincott Williams & Wilkins (LWW)
2	Textbook of Medical Physiology	Arthur C. Guyton	W. B. Saunders Company
3	Review of Medical Physiology	William F. Ganong	McGraw Hill
4	Biochemistry	Harper	Lange
5	Methods in Biostatistics	B. K. Mahajan	Jaypee
6	Biochemistry	Lippincott	Lippincott Williams & Wilkins (LWW)
7	Grays Anatomy	Henry Gray	Elsevier

SI. No.	Name of the Textbook	Authors	Publisher
1	Textbook of Pharmacology	Brunton	McGraw Hill
2	Goodman and Gilmans-The	Joel Griffith Hardman	McGraw Hill
	Pharmacological basis of		
	Therapeutics		

Pharmacology/ Microbiology/ Pathology (Latest Edition)

VIII. RECOMMENDED JOURNALS:

SI. No.	Name of the Journal	
1	Journal of Association of Physicians of India (JAPI)- Monthly.	
2	British Medical Journal (BMJ)- weekly	
3	New England Journal of medicine- weekly.	
4	The Lancet- weekly.	
5	American journal of medicine –monthly.	
6	Indian Journal of Tuberculosis- Quarterly.	
7	Postgraduate Medical journal- Monthly.	
8	Stroke- Monthly.	
9	Neurology Clinic of North Amedica Quarterly.	
10	Indian Journal of Public Health- Quarterly.	
11	Cardiology Clinics – Quarterly.	
12	Heart – Monthly.	
13	JAMA- American Weekly.	
14	Indian Practitioner- Monthly.	
15	The Practitioner – U.K Monthly.	
16	Indian- Heart Journal – Bimonthly.	
17	National Medical Journal of India – Bimonthly.	
18	Medicine – Monthly-Edt. Allister. Vale.	
19	Clinics in Chest Medicine- Quarterly.	
20	Antiseptic- Normal Journal- Monthly.	
21	Bombay Hospital Journal – Quarterly.	
22	Medical Clinics of North America- Bimonthly.	
23	Post-Graduate Medicine- Monthly.	
24	European Respiratory Journal- Monthly.	
25	Indian Journal of Chest Diseases- Quarterly.	
26	Indian Journal of Tuberculosis- Quarterly.	
27	Brain- Monthly	
28	Annals of Neurology- Monthly	
29	Journal of Indian Medical Association- Monthly.	

POST GRADUATE DEGREE COURSE M.D. in PAEDIATRICS

I. GOALS :

Preamble

A Post Graduate student after undergoing the required training should be able to deal effectively with the need of the community and should be competent to handle all the problems related to his speciality including the recent advances. He should also acquire skills in teaching of medical / para-medical students.

The goals of MD course in Pediatrics is to produce a competent pediatrician who:

- Recognizes the health needs of infants, children and adolescents and carries out professional obligations in keeping with principles of National Health Policy and professional ethics
- Has acquired the competencies pertaining to pediatrics that are required to be practiced in the community and at all levels of health system
- Has acquired skills in effectively communicating with the child, family and the community
- Is aware of the contemporary advances and developments in medical sciences as related to child health
- Is oriented to principles of research methodology
- Has acquired skills in educating medical and paramedical professionals

II. OBJECTIVES

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the following subheadings.

- 1. Knowledge
- 2. Skills
- 3. Human values, ethical practice and communication abilities.

1. Knowledge

At the end of the MD course in Pediatrics, the student should be able to:

- 1. Recognize the key importance of child health in the context of the health priority of the country.
- 2. Practice the speciality of Pediatrics in keeping with the principles of Professionalism
- 3. Identify social, economic, environmental, biological and emotional determinants of child and adolescent health, and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care to children.
- 4. Recognize the importance of growth and development as the foundation of Pediatrics; and help each child realize her/his optimal potential in this regard.
- 5. Take detailed history, perform full physical examination including neuro development and behavioral assessment and anthropometric measurements in the child and reach a clinical diagnosis.
- 6. Perform relevant investigative and therapeutic procedures for a pediatric patient.
- 7. Interpret important imaging and laboratory results.
- 8. Diagnose illness in children based on the analysis of history, physical examination and investigative work up.
- 9. Plan and deliver comprehensive treatment for illness in children using principles of rational drug therapy.
- 10. Plan and advice measures for the prevention of childhood diseases and disabilities.
- 11. Plan rehabilitation of children suffering from chronic illness and handicap, and those with special needs.
- 12. Manage childhood emergencies efficiently.
- 13. Provide comprehensive care to normal, 'at risk' and sick neonates.
- 14. Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation.

- 15. Recognize the emotional and behavioral characteristics of children, and keep these fundamental attributes in focus while dealing with them.
- 16. Demonstrate empathy and humane approach towards patients and their families and keep their sensibilities in high esteem.
- 17. Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities.
- 18. Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based pediatrics.
- 19. Demonstrate competence in basic concepts of research methodology and epidemiology.
- 20. Facilitate learning of medical/nursing students, practicing physicians, paramedical health workers and other providers as a teacher-trainer.
- 21. Play the assigned role in the implementation of National Health Programs, effectively and with responsibility.
- 22. Organize and supervise the desired managerial and leadership skills.
- 23. Function as a productive member of a team engaged in health care, research and education.

2. Skills

i) History & Examination. History taking including psychosocial history, physical examination including fundus examination, newborn examination, including gestation assessment. Thermal protection of young infants, nutrition, anthropometry and its assessment, assessment of growth, use of growth chart, SMR rating, developmental assessment, communication with children, parents, health functionaries, social support groups, family tree and genetic counseling.

ii) Bed side Procedures.

a. Monitoring skills: Temperature recording, capillary blood sampling, arterial, blood sampling, etc.,

- b. Therapeutic skills: Hydrotherapy, nasogastric feeding, endotracheal intubation, cardio-pulmonary resuscitation (Pediatric and neonatal), administration of oxygen, venipuncture and establishment of vascular access, administration of IV fluids, blood, blood components, parenteral nutrition, intraosseous fluid administration, intra-thecal administration of drugs. Common dressings and abscess drainage and basic principles of rehabilitation.
- c. Investigative skills: Lumbar puncture, ventricular tap, bone marrow aspiration, pleural, peritoneal, pericardial and subdural tap, biopsy of liver and kidney. Collection of urine for culture, urethral catheterization, suprapubic aspiration, etc.,

iii) Diagnostic Procedures:

Bed Side Investigations. Hemoglobin, Total Leucocyte Count, ESR, peripheral smear, staining, examination, urine routine and microscopic examination, stool microscopy, hanging drop preparation, examination of CSF and other body fluids, gram staining, ZN staining, shake test on gastric aspirate.

Interpretation of plain X-ray chest, abdomen, bone, skull; ECG, ABG report, CT scan, MRI scan etc.

Understanding of common EEG patterns, audiograms, Ultrasonographic abnormalities and isotope studies.

3. Human Values, Ethical practice and communication skill.

- Adopt ethical principles in all aspects of his/her practice; professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his / her team in a congenial working atmosphere.
- Apply high moral and ethical standard 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 patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS

1) KNOWLEDGE

SI. No.	Knowledge, Must know	Knowledge, Desirable to
		Know
	The Field of Pediatrics	
1	Evaluating Medical Literature and	History of Pediatrics
	Critical appraisal of Journal articles	
2	Overview of Child Health	Traditions and Cultural Issues
		pertaining to Child Care
3	The Normal Child	
4	Preventive and Social Pediatrics	
5	Epidemiology, statistics and Research Methodology including	
	Dissertation	
6	Ethical Issues in Pediatrics	
	Growth and Development	
1	Models of Development	IQ assessment
2	Fetal growth and development	
3	The newborn growth and development	
4	Infant, Preschool, Early School, and Adolescent growth and	
	development	
5	Assessment of Growth	
6	Developmental Assessment	
7	Standards / Nomograms (including Indian)	
8	Approach to Short stature	
9	Approach to Obesity	
10	Approach to under nutrition	
	Psychological Disorders	
1	Assessment and Interviewing	1. Psychiatric considerations
		of CNS injury
2	Vegetative Disorders-Rumination, Pica, Enuresis, Encopresis	
3	Sleep disorders	
4	Habit Disorders	2 Mood Disorders
5	Anxiety Disorders	3. Disruptive Behavioral
		disorders
6	Suicide	4. Sexual behavior and its
		variations
7	Attention deficit and hyperactivity disorders	5. Pervasive developmental
		disorders and childhood
		psychosis

8	Autism	6. Psychological treatment
9	Poor scholastic performance in school age child	7.Neurodevelopment
_		dysfunction
10	Psychosomatic Illness	
11	Learning disorders	
	Social Issues	1
1	Adoption	1. Effects of a mobile society
2	Street Child, Girl Child	2. Impact of Violence
3	Child Care	•
4	Separation, death	3. Single parent child
5	Child rights and protection including POCSO Act	4. Foster care
	Media (TV, Movies) and its effect on the child	
6	Abused & Neglected Children	5. Factitious disorder by
		proxy (MUNCHAUSEN
		SYNDROME)
7	Media (TV, Movies) and its effect on the child	
	Children with special Needs	
1	Failure to thrive- Problems, Approach and Evaluation	1. Children in Poverty
2	Developmental disabilities, Chronic Illness	2. Homeless children
3	Intellectual Disability - Problems,	3. Foster Children
	Approach and Evaluation	
4	Care of Child with fatal illnesses and Palliative Care	4. Runaway children
	Nutrition	1
1	Nutritional Requirements - Water, Energy proteins,	
	carbohydrate ,Fats, Minerals, Vitamins	
2	Diet and Nutritional Evaluation	
3	Diet for later childhood and adolescent	
4	Infant and Young Child Feeding	
5	Breast Milk Feeding, Lactation Management, BFHI	
6	Nutrition Values of Indian Foods, Recipes.	
7	Complimentary feeding	
8	Feeding through 1 st and 2 nd Years	
9	Nutritional disorders Including Obesity	
10	Protein energy Malnutrition	
11	Vitamin Deficiencies and Excess	
12	Micro nutrient Malnutrition	
13	Nutrition in Special situations - LBW and Premature babies,	
	Inborn errors of Metabolism, Chronic Illness, Surgery,	
14	Critically III Child, Diabetes	
14	Petho physicles: of Pody Elvids and Elvid thereasy (Amerocash	
1	Patho-physiology of Body Fluids and Fluid therapy (Approach	and management)
	Privstology of Fillids, electrolytes and Acid Bases	
2	Denyoration and fluid management	
3	Lectionyte disorders	
4	Acid Base Disorders	

5	Special Situations – Pyloric stenosis, CNS disorders, Burns	
5	Peri-operative Endocrine disorders, Renal Failure and others	
	PEDIATRIC DRI IC THERAPY	
1	Pharmacokinectics and Drug Therapy in Children	
!	Acutely III Child	
1	Evaluation in Emergency situations	1 Pediatric Anaesthesia
2	Injury control	
3	Emergency Medical Services	2 Organization of a
Ū		PICU/NICU
5	Pediatric Critical Care Respiratory Failure	3. Equipments for Intensive
	and Ventilation, Circulatory Failure and Shock, Acute	Care
	Neurological Dysfunction,	
	Resuscitation – Basic and Advanced, HBB / NRP / PALS / BLS	
	Post resuscitation stabilization,	
	Cold / Heat Injury	
6	Transportation of Sick child / Neonate	
7	Post-operative supportive care.	
	Emergencies / Critical Care Pediatrics	
1	Fluid abnormalities	
2	Electrolyte abnormalities	
3	Thermoregulation problems	
4	Acute Kidney Injury	
5	Hypertensive crisis	
6	Congestive Cardiac failure	
7	Cardiogenic shock	
8	Pericardial tamponade	
9	Cyanotic spells	
10	Unstable and stable arrythmias	
11	Vomiting and Diarrhea	
12	GI Bleeds – Hematemesis, Melena, Hematochezia	
13	Adrenal Crisis	
14	Metabolic problems – hyperammonemia, lactic acidosis, acid	
	base abnormalities, Hypoglycemia	
15	Septicemic shock, viral infections and shock	
16	Pneumothorax, empyema, pleural effusion, massive ascites	
17	Severe Anemia, Bleeding child, Neutropenia	
18	Pain management and Drug therapy	
19	ARDS	
20	Respiratory Failure	
21	Burns / electrocution	
22	Animal Bites	
23	Preanesthetic check-up (PAC)	
24	Sickle cell crisis, severe complicated malaria	
25	Acute severe asthma, Bronchiolitis	
26	Status epilepticus	
27	Febrile seizures	

	-	-
28	Coma, Increased intra-cranial pressure	
29	Cardiopulmonary resuscitation	
30	Shock	
31	Upper airway obstruction	
32	Near drowning	
33	Poisoning	
34	Snake bite	
35	Scorpion sting	
36	Physical abuse	
37	Sexual abuse	
	Human Genetics	
1	Molecular Basis of Genetic Disorders	
2	Molecular Diagnosis	1. Human Genome Project
3	Patterns of inheritance	,
4	Chromosomal clinical abnormalities	
5	Genetic Counseling	Antenatal diagnosis
6	Dysmorphism	
7	Gene therapy	
	Metabolic Disorders	
1	Approach to Inborn Errors of Metabolism(IEMs)	1. Disorders of Purine and
•		pyrimidine metabolism
2	Common defects in metabolism of amino acids	
3	The Pornhyrias	2 Rare defects in
		metabolism of amino
		acids
4	Common defects in Lipid Metabolism	3. Rare defects in Lipid
		Metabolism
5	Common defects in carbohydrate metabolism	4. Rare defects in
_		carbohvdrate metabolism
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7	Acute glomerulonephritis	
8	Tubular disorders	
	Function	
	RTA	
	Diabetes insipidus	
9	Renal Failure	
10	RPGN	
11	Renal Replacement therapy	
12	Renal transplantation	
13	Bartter syndrome	4. Interstitial nephritis
14	Investigations	5. Cortical necrosis
15	Toxic nephropathy	
	Urological disorders	
1	UTI	
2	Congenital anomalies & dysgenesis of the kidney	
3	Vesicoureteral reflux	
4	Bladder anomalies	
5	Obstructions	
6	Penis, urethral anomalies	
7	Voiding dysfunction	
8	Scrotal anomalies	
9	Genitourinary trauma	
10	Urinary lithiasis	
11	Investigations – imaging renal function tests	
12	Neurogenic bladder	
	Gynaecological problems	
1	Menstrual problems	1 Neoplasms
2	Vulvovaginitis	2 Breast Disorders
3	Developmental anomalies	3 Hirsutism polycystic
		ovaries
4	A Child with special gynecological needs	4 Gynecological imaging
		5 Athletic problems
L	1	

	Endocrine	
1	Hypothalamus and pituitary	
	Hypopituitarism, Growth Hormone deficiency,	
	Diabetes insipidus	1. Carcinoma of thyroid
	ADH	
	Physiology of Puberty	
	Disorders of Puberty	
	Precocious Puberty	
	Delayed Puberty	
2	Thyroid	
	Thyroid studies	
	Hypothyroidism	2 Tumours of testis/ovary
	Goitre	3. Multiple endocrine
	Hyperthyroidism	Disorders
3	Parathyroid physiology and disorders	
4	Diabetes mellitus & Diabetic Ketoacidosis	
5	Adrenal disorders	
	CAH	
	Cushing syndrome	
	Addisons disease	
	Excess mineralocorticolds	
	Phenetromage terms	
	Adrenal massas	
	Autenai masses	
1	CNS Examination Localization of locions	
<u> </u>	Congenital anomalies	
2	Solutions minicking solutions and Epiloptic	
5	Syndromes	
4	Headaches	
5	Neurocutaneous disorders	
6	Coma	
7	Brain death	
8	Movement disorders	
9	Head Injury	
10	Neurodegenerative disorders – Approach Grey/white	
11	Acute Stroke	
12	Hydrocenhalus Pseudotumor cerebri and microcenhaly	
13	Brain abscess	
14	Tumors	
15	Spinal cord disorders	
16	Investigations	
17	Antiepileptic drugs	
18	SSPF	
19	Acute flaccid paralysis	
20	Acute Demvelinating Encephalomvelitis	
20	Acute Demyelinating Encephalomyelitis	

21	Approach, Investigations and management of UMN,LMN,	
	Extrapyramidal, and Cerebellar lesions	
22	Cerebral Palsy	
23	Neuroinfections	
24	Encephalopathies	
	Neuromuscular	
1	Evaluation, Investigations	1 Developmental disorders of muscle
2	Muscular Dystrophies, Congenital Myopathy, Myositis, Endocrine and metabolic myopathy	
3	Neuromuscular transmission and motor neuron abnormalities	
4	GB Syndrome	2 Motor sensory neuropathy
5	Bell's palsy	3 Autonomic neuropathies
6	Floppy Infant	
7	Myaesthenia Gravis	
	EYES	
1	Examination of eye	1 Refraction, accommodation
2	Diseases of Eye movement and alignment disorders	2 Vision
3	Diseases of conjunctiva – Conunctivitis	
4	Diseases of Lens – Cataracts	
5	Pupils and iris	3 Lids
6	Diseases of Optic nerve – Papillitis Neuritis, Papilledema	
7	Diseases of cornea – Clouding	4 Uveal tract
8	Vitamin A Deficiency	5 Retina and vitreous
9	Lacrimal problems – Dacrocystitis	6 Glaucoma
		7 Orbital abnormalities
10	Retinopathy of Prematurity	
11	VEP	
12	Injuries to eve	
	EAR	
1	Clinical manifestations	1. Congenital malformations
2	Hearing loss	2. Inner ear diseases
3	Externa Otitis	3. Trauma
4	Otitis Media	4. Tumors
5	BAER/ OAE	
	SKIN	I.
1	Morphology	1. Cutaneous defects
2	Evaluation	2. Photosensitivity
3	Cutaneous manifestations of systemic diseases	
4	Principles of therapy	3. Epidermis disorders
	Diseases of the neonate	4. Keratinization disorders
6	Ectodermal dysplasias	5. Dermis disorders
7	Vascular disorders	6. Subcutaneous disorders
8	Cutaneous nevi	7 Sweat glands
9	Pigment Disorders	
j j	Hyperpigmentation	8. Hair
	Hypopigmentation	9. Nails
		- · · · · · · · · · · · · · · · · · · ·

10	Vesiculobullous disorders	10. Mucous membranes
11	Eczema	11. Tumors
12	Cutaneous Infections – Bacterial, viral, Fungal.	
13	Arthropod bites and infections	
14	Acne	
15	Nutritional diseases	
16	Drug Reactions	
	Bone / Joint	
1	Evaluation	1 Sports medicine
2	Diseases of Foot and toes	2 Pseudoachondroplasia
3	Torsional & Angular deformities	3 Diagnosis, assessment of genetic skeletal disorders
4	Leg length discrepancy	4 Dysplasias
5	Diseases of knee	5 Ellis van Creveld syndrome
6	Diseases of Hip	6 Osteochondrodysplasia
7	Diseases of spine	7 Inherited osteoporosis
8	Diseases of Neck	
9	Upper limb	8 Hypophosphatasia
10	Arthrogryposis	9.Primary
		Chondrodystrophy
11	Common Fractures	10 Idiopathic hypercalcemia
12	Arthritis – approach investigations, Management	11 Hyperphosphatasia
13	Congenital Dislocation of Hip	
14	Septic arthritis and osteomyelitis	
	Genetic skeleton	
1	Lethal and nonlethal skeletal dysplasias	
2	Achondroplasia	
3	Osteopetrosis	
4	Marfans syndrome	
5	Osteogenesis imperfecta	
	Metabolic Bone Disease	·
1	Bone and vitamin D	
2	Familial Hypophosphatemia	
3	Rickets – Nutritional and non nutritional	
	Unclassified diseases	· · · · · · · · · · · · · · · · · · ·
1	SIDS	1 Sarcoidosis
2	Histiocytosis	2 Progeria
3	Cystic fibrosis	3 Chronic fatigue syndrome
	Environmental	
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1	Lead poisoning	
2	Envenomation	
3	Chemical Pollutants	
4	Mammalian bites	1 Heavy metal intoxication
5	Common poisonings – OP, Kerosene, Phen obarbitone, Iron	2 Biological & chemical
		3 Non bacterial food poisoning
6	Radiation	
	NATIONAL PROGRAMS RELATED TO CHILD HEALTH	
	HEALTH STATISTICS	

Note : Student should refer to the latest editions of recommended books and Journals

PEDAGOGY

o Principles of learning, objectives, teaching learning methods

ORGANISATION OF OFFICE PRACTICE

o Equipment, Documentation, Records, Space and functioning

RECENT ADVANCES IN PEDIATRICS

o Duration Last 5 Years.

ALLIED SUBJECTS

Anatomy

o Applied Embryology, Development of major organ systems

Physiology

Applied Physiology with regard to major organ systems

Biochemistry

o Biochemical basis of diseases in children – Nutritional and metabolic

Pathology

o Pathophysiology of diseases in children, Pathogenesis and Basic Histopathology

Microbiology

o Clinical Microbiology applied to investigations for diseases in childhood serology staining and culture

Pharmacology

o Clinical pharmacology, Therapeutics of childhood diseases, drug interactions, Rational drug therapy and Adverse Drug Reactions,

Community Medicine

o Health Care Systems – structure and function, Health Statistics, National Health programs.

Pediatric Surgery

o Recognition and referral of surgical conditions in children

Radiology

o Clinical Indications and Interpretations of X-ray, Ultrasound, CT, MRI

2) SKILLS

Please note code :

PI – Perform Independently

PA – Perform with assistance

O – Observer

(Number at end of item indicates minimum number of supervised and documented skills)

Psychomotor Skills

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Clinical History and Physical examination	All cases			
Human Lactation management (counseling and practical skills)	20			
Neonatal resuscitation	30			
Pediatric resuscitation	30			
Teaching encounters	5			
Intravenous injections	50			
Intravenous cannulation	50			
Venesection	02			
Surgical dressing	10			
Lumbar puncture	50			
Test dose	10			
Intravenous Infusions	50			
Blood transfusions	50			
Neonatal Exchange transfusions	05			
Mechanical ventilation	05			
Phototherapy	20			
Universal precautions and infection control	20			
Kangaroo Mother Care (KMC)	10			
Arterial Blood Gas (ABG)	50			
Central line, Central Venous Pressure (CVP)	05			
Intraosseous	05			
Bone marrow aspiration, trephine biopsy	05			
Pleural tap	10			
Paracentesis – diagnostic and therapeutic	10			
Mantoux test	20			
Vaccination as per National Immunization Schedule	20			
Sampling for Fluid cultures	20			
Liver biopsy	05			
Neonatal, Pediatric Partial exchange	05			
Respiratory Management (All PI)				
Nebulization	50			
Inhaler therapy	10			
Oxygen delivery	100			

Critically ill child (All PI)	Critically ill child (All PI)			
Monitoring a sick child	50			
Pulse oximetry	50			
Infant feeding tube / Ryles tube, stomach wash	50			
Urinary catheterization	20			
Restraining a child for a procedure	50			
ORS and ORT	50			
Prognostication	30			
Laboratory – Diagnostic (All PI)	•			
Urine Protein, sugar, Microscopy	10			
Peripheral blood smear	10			
Malarial smear	10			
Ziehl Nielson staining – sputum, gastric aspirate	10			
Grams staining – CSF, pus	10			
Stool pH, reducing substances, microscopy	10			
KOH smear	2			
Neonatal tests (All PI)				
Apt test	5			
Shake test	5			
Clinical Assessment skills (All PI)				
Clinical History and Physical examination	1			
Anthropometry	100			
Dietary recall, calories and protein estimation	100			
Nutritional advice	100			
Gestational assessment	50			
Neurological examination of newborn	50			
Primitive reflexes	10			
Fundoscopy	20			
Otoscopy	10			
Examination of external genitalia – male and female	10			
Tanner's SMR scales	10			
DDST, BDST, TDST	20			
Pre-operative assessment	5			
Per rectal examination	2			
Interpretation (All PI)				
Clinical History and Physical examination				
Blood, Urine, CSF and Fluid investigations – hematology	50			
Biochemistry	50			

Chest X-ray	50
ECG	20
Arterial Blood Gas	50
Abdominal X-ray	20
Bone and joint X-ray	20
CT scan Brain and MRI Brain	10
Barium studies	05
IVP,VUR studies	05
Ultrasound abdomen	10
ECHO	05
Neurosonogram	10
Communication skills (All PI)	
Clinical History and Physical examination	
Communicating health disease	
Communicating about a seriously ill or mentally abnormal child	
Communicating death	
Informed consent	
Empathy with a family	
Referral letters, replies	
Discharge summaries	
Death Certificates	
Pre counseling HIV	
Post counseling for HIV	
Basic Pedagogy sessions – teaching students, adults	
Lectures, bedside clinics, discussions	
Medline search, internet, Computer usage	
List of Observations	Γ
Genetic counselling	2
Classification of diseases	2
BCG Vaccinations	10
List of PA Skills	1
Sedation	10
Analgesia	10
Brain death	10
Intercostal tube placement with underwater seal	5
Peritoneal dialysis	2
Subdural/ Ventricular tap	5
Total Parenteral Nutrition	01

IV. TEACHING AND LEARNING ACTIVITIES

A) Theoretical Teaching

- 1. Lectures: Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.
- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.
- 3. Subject Seminar: Recommended to be held once a week. All the PG 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 timetable for the subject with names of the students and the moderator should be announced in advance.
- 4. Case Discussion: Recommended to be held once a week. All the PG 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 timetable for the case presentation with names of the students should be announced in advance.
- 5. Ward Rounds: Ward rounds may be service or teaching rounds.
 - o Service Rounds: Postgraduate students should do service rounds every day for the care of the patients. Newly admitted patients should be worked up by the post graduate student and presented to the faculty members the following day.
 - o Teaching Rounds: Every unit should have 'grand rounds' for teaching purpose at the bed side. A diary should be maintained for day-to-day activities by the post-graduate students.

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

- 6. Clinico-Pathological Conference: 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 CPCs.
- 7. Inter departmental Meetings: Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a month. These meetings should be attended by post-graduate students and relevant entries must be made in the Log Book.

Pathology: Interesting cases shall be chosen and presented by the postgraduate students and discussed by them as well as the senior staff of Pathology department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advanced immunohisto-chemical techniques, the burgeoning markers, other recent developments can be discussed.

Radio-diagnosis: Interesting cases and the imaging modalities should be discussed. Emphasis should be given for the radiological differential diagnosis.

- 8. Mortality Meeting: The mortality meeting should be conducted in the department every month. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records should be discussed in detail during this meeting.
- **9. Teaching Skills:** Post-graduate students must teach under graduate students (eg. Medical, Nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. Assessment is made using a checklist by medical faculty as well as by the students. Record of their participation is to be kept in Log Book. Training of postgraduate students in Educational Science and Technology is recommended.
- **10.** Continuing Medical Education Programmes (CME): Recommended that at least 1 state level CME programmes should be attended by each student during the course.
- **11. Conferences:** Attending conference is compulsory. Post-graduate student should attend 1/2 National and 1/2 state level conference during the course.

- 12. NALS / ADVANCED NRP and PALS, BLS Certification: Should be certified in NALS / ADVANCED NRP and PALS, BLS during study course before appearing for final examination.
- **13. Research Activities:** The Post-graduate students to be encouraged to carry out research activities in the department other than dissertation work.

B). CLINICAL / PRACTICAL TRAINING:

Core:

Pediatrics	-	21 months
Neonatology	-	09 months
Intensive Care / Emergency	-	03 months
Total	-	33 months

Optional Specialties: (Subjects to availability) 3 months, preferably during the 2nd or 3rd year of the course.

Oncology Neurology Pediatric surgery Nephrology Cardiology Clinical Hematology / Pathology Dermatology Pulmonology Gastroenterology Clinical Microbiology Community / Rural

Radiology

V. OTHER CRITERIA TO BE FULFILLED FOR THE DEGREE COURSE

1. Internal Evaluation

There will be a theory test at the completion of one year and preliminary test three months prior to university examination. Clinical test may also be conducted as a part of internal evaluation.

2. Maintenance of Log Book

All aspects of the work done by each student in the department shall be entered regularly in the log book. The log book shall be scrutinized by the concerned staff at regular intervals. The log book shall be reviewed at the time of vivavoce in the university examination.

3. Dissertation:

Every candidate pursuing MD 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.

For details regarding DISSERTATION Refer 9.1 to 9.11 of Chapter-I.

VI. SCHEME OF EXAMINATION

SCHEME OF EXAMINATION

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory and dissertation is accepted.

A. Theory: 400 Marks

There shall be four papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No. of Questions	Marks for each question	Total Marks
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper I	:	Fetal and Newborn
Paper II	:	General Pediatrics I*
		General Paediatrics I includes : Respiratory, CNS, Hematology, Nutrition, Growth and Development, Oncology, Endocrine, Metabolic, Allergy/Immunology, Psychiatry.
Paper III	:	General Pediatrics II**
		Includes : Infection. Gastroentrology, Hepatology, Immunization, Renal, CVS, Surgical, Adolescent, Collagen, Vascular, Miscellaneous
Paper IV	:	Ambulatory OPD Pediatrics, Community and social Pediatrics, emergency and Critical Care Pediatrics.

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

B) CLINICAL EXAMINATION: 300 MARKS

	No of Cases	Marks
Long Case	1	100
Short Case	1	50
Newborn case	1	50
Case Spotters	25x4	100
Total		300

Note:

- The long case will be a patient with either central nervous system (CNS) or a Multi system involvement, which can test the knowledge and skill of the student.
- Grand Rounds : Emergency, Ambulatory Cases, Spotters

C. VIVA- VOCE EXAMINATION: 100 MARKS

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills.

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

Viva voce four tables of 80 marks each includes the following

- 1. Nutrition
- 2. X- Rays, MRI, CT
- 3. Drugs and vaccines.

4. Instruments, Case based interpretation of investigations

2) PEDAGOGY EXERCISE AND LOG BOOK – 20 MARKS

(i) Candidate is asked to make a presentation for 8 to 10 minutes on a topic given in the beginning of clinical examination. 10 Marks

(ii) Candidate is asked to make a presentation for 8 – 10 minutes on the dissertation topic and review of Log Book 10 Marks

D) MAXIMUM MARKS

Maximum Marks for MD Degree	Theory	Practical	Viva	Grand
course in Prodictuics		(Clinical)	Voce	Total
course in raediatrics	400	300	100	800

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

Textbooks :

Essential

SI. No.	Name of the Book	Author	Publisher
1	Nelson's Textbook of Paediatrics,	Behrman, Kleigman,	Elsevier
		Jenson	
2	IAP Guide book of Immunization	Nitin K. Shah	Jaypee Brothers
3	Manual of Neonatal Care	John P Cloherty,	Lippincot
		Eric C Eichenwald,	Williams and Wilkins
		Ann R Stark	
4	Care of the Newborn	Singh M.	Sagar Publication
5	O.P. Ghai Essential pediatrics	O. P. Ghai, Piyush Gupta,	CBS Publisher and
		V K Paul	Distributors
6	Pediatrics Clinical methods	Singh M.	Sagar Publication
7	Hutchison clinical methods	Michael Swash	Saunders
8	Principles of Pediatric and Neonatal	A Parathsarthy, H P S	Jaypee publication
	Emergencies	Sachadev	
9	Illingworth Normal child	Illingworth R. S.	Churchill Livingstone
10	Illingworth Development of the child and	Illingworth R. S.	Churchill Livingstone
	infant.		
11	IAP Text book of Paediatrics	A Parathsarthy,	Jaypee publication

References

SI. No.	Name of the Book	Author	Publisher
1	Rudolph's Pediatrics	Colin D Rudolph, Abraham Rudolph	Mc Graw Hill
2	Forfar and Arneil's Textbook of Pediatrics	Neil Mc Intosh, Roselind Smyth, Peter Helms	Churchill Livingstone
3	Oski's Pediatrics: Principles and Practice	Frank A. Oski, Julia A. McMillan, Catherine D. DeAngelis, Joseph B. Warshaw	Wolter Kluwer Company
4	Avery's Disease of the Newborn	Taeush, Ballard, Gleason	Elsevier
5	Roberton's Text book of Neonatology	Janet M. Rennie	Elsevier
6	Nada's Pediatric Cardiology	James E Lock, Donald C Fielar, F Keane	Elsevier
7	Perloff's Approach to congenital Heart Disease	Joseph K Perloff, John S Child,	Harcourt Brace & Company , W B Saunders Co.
8	Harriet Lane pediatric clinical manual	Jason Robertson, Nicole Shilkofski	Elsevier
9	Blood diseases of Infancy and Childhood	Dennis R Miller's, Robert L B, Linda Patrica Miller	Saunders/ Elsevier
10	Clinical Hematology in Medical Practice	D C DeGruchy's, F Firkin	Churchill Livingstone
11	Pediatric Nephrology	Holliday, M.A.; Barrett, Avner, E.D.	Williams and Wilkins
12	Caffey's Pediatric X-ray diagnosis	Jerald P. Kuhn, Thomas L. Slovis, Jack O Haller	Mosby
13	Protein Energy Malnutrition	Alleyne, G A O	Edward Arnold
14	Tuberculosis in Children	Miller F J W	Churchill Livingstone
15	Essentials of Tuberculosis in Children	Vimlesh Seth, S K Kabra	Jaypee Brothers
16	Swenson's Pediatric Surgery	Orvar Swenson	Appleton-Century Crofts (Education Division)
17	Text book of Pediatric Infectious diseases	Ralph D Feigin, James D Cherry, Gail J Dammlor, Sheldon L Kaplan,	Saunders
18	Fenichel's Pediatric Neurology	Fenichel G M	Saunders / Elsevier

19	Kendig's Respiratory Diseases in Pediatrics	Victor Chernic, Thomas	Saunders
		Boat, Robert Wilmott,	
		Andrew Bush	
20	Liver Disorders in Childhood	Alex P Mowat	Butterworth and Co
21	Roger's Pediatric Critical Care	Mark C Roger, Mark A	William & Wilkins
		Helfaer	
22	Smith's Recognisable patterns of Human	Kenneth Lyons Jones	Saunders / Elsevier
	Malformations		
23	Swaiman's textbook of pediatric neurology	Kenneth F Swaiman,	Mosby
		Stephen Ashwal	
24	Practical pediatric nutrition	Elizebeth M E	Poskitt

VIII RECOMMENDED JOURNALS

Indexed Journals

- 1. Indian Pediatrics
- 2. Indian Journal of Pediatrics
- 3. Pediatric Clinics of North America
- 4. New England Journal of Medicine
- 5. Lancet
- 6. British Medical Journal
- 7. Journal of Pediatrics
- 8. Archives Diseases of Childhood and Adolescence
- 9. Pediatrics
- 10. Clinics in Perinatology
- 11. Seminars in Neonatology
- 12. Tropical pediatrics
- 13. Journal of Neonatology (National Neonatology forum of India)

POSTGRADUATE DEGREE M.D. IN PSYCHIATRY

I. GOALS:

The course of the postgraduate students in Psychiatry is to impart Knowledge and skills that may enable them to diagnose and treat common and rare diseases, complications of Psychiatric diseases and their unusual manifestations. The student should also be aware of the recent advances in the specialty.

At the end of postgraduate training the student should be able to:

- Practice efficiently and effectively, backed by scientific Knowledge and skill.
- Exercise empathy and a caring attitude maintaining high ethical standards.
- Continue to evince keen interest in continuing medical education in the specialty, irrespective of whether he/she is in a teaching institution or in practice.
- Be a motivated 'teacher' defined as a specialist keen to share his/her knowledge and skills with a colleague or a junior or any learner.

II. OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the following subheadings.

- 1. Knowledge
- 2. Skills
- 3. Human values, ethical practice and communication abilities

1. Knowledge:

At the end of the course of Psychiatry, the student should be able to:

- Demonstrate sound knowledge of common diseases, their clinical manifestations including emergency situations and investigative procedures to confirm the diagnosis.
- Acquire expertise in good history taking, interview techniques, physical and psychiatric examination, providing basic life support, perform essential

diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition.

- Describe the mode of action of commonly used drugs, their, doses, side effects, toxicity, indications and contra indications and drug interactions.
- Describe commonly used modes of management available for the treatment of various diseases and to offer a comprehensive plan of management for a given disorder.
- Diagnose and manage emergencies, specially recognizing the need for referral wherever appropriate and necessary.
- He or she should be able to do crisis interventions.
- Demonstrate understanding of basic sciences relevant to the specialty.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning therapeutic measures.
- Recognize conditions that may be outside the area of his/her specialty/ competence and to refer them to proper specialist.
- Update oneself by self study and attending courses, conferences and seminars relevant to the specialty.
- Teach and guide his / her team, colleagues and other students.
- Undertake audit, use information technology tools and carry out research, both basic and clinical, with the aim of publishing his / her work and presenting his / her work at various scientific fora.

2. Skills:

The Post Graduate student should be well versed in

- Good history taking, interview techniques, physical examination, psychiatric examination, providing basic life and performing common procedures
- Psychotherapies of various types
- Behavior therapy
- Management of emergencies.

- Crisis interventions.
- Choosing the required investigations.
- Using appropriate admission procedures as per the Mental Health Act

3. Human values, Ethical practice and Communication abilities:

- Adopt ethical principals in all aspects of his/ her practice; professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular to explain various options available in the management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his / her 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 of his / her knowledge and skill and to ask for help from colleagues when needed.
- Respect patient's rights and privileges including patient's right to seek information and right to seek a second opinion.

III. Course Contents (Components of curriculum):

No limit can be fixed and no fixed number of topics can be prescribed as course content. A student is expected to know the subject in depth. However, emphasis should be on the disease / health problems most prevalent in that area. Knowledge of recent advances and basic sciences as applicable to his / her specialty should get high priority. Competence in psychiatric, medical and psychotherapeutic skills (actual hands on training) must be ensured.

A. Theoretical Concepts:

- 1. Adjustment Disorders
- 2. Anxiety Disorders
- 3. Child and adolescent psychiatric disorders.
- 4. Chronobiology
- 5. Classification in Psychiatry

- 6. Community Psychiatry
- 7. Consultation-Liaison Psychiatry
- 8. Culture Bound Syndromes
- 9. Dissociative (Conversion) disorders
- 10. Eating Disorders
- 11. Electro-Convulsive Therapy
- 12. Electrophysiology
- 13. Emergencies in Psychiatry
- 14. Epidemiology of Psychiatric disorders
- 15. Ethics In Psychiatry
- 16. Factitious Disorders
- 17. Forensic / Legal Psychiatry
- 18. History of Psychiatry
- 19. Impulse-Control Disorders
- 20. Mental Health Issues In Women
- 21. Mental Retardation
- 22. Mood Disorders
- 23. Neuroanatomy, Neurophysiology and Neurochemistry related to Psychiatry
- 24. Neuro-imaging related to psychiatry
- 25. Neuropsychology
- 26. Psychology (General & Clinical): With Special Emphasis on Personality, Emotions, Learning, Motivation, memory, etc.
- 27. Psychology (Social)
- 28. Psychometry / Psychodiagnostics
- 29. Organic Psychiatry (Delirium, Dementia etc.)

- 30. Personality Disorders
- 31. Psychopharmacology
- 32. Psychoses (Including Schizophrenia, Schizophreniform Disorder, Schizoaffective Disorder, Delusional Disorder, Brief Psychotic Disorder, Shared Psychotic Disorder, etc.)
- 33. Psychosomatic Disorders.
- 34. Psychotherapy: Introduction to different types of Psychotherapies
- 35. Occupational Therapy and Rehabilitation: Basic Concept.
- 36. Newer therapies like rTMS, Vagal Nerve Stimulation, Deep Brain Stimulation, Psycho surgery
- 37. Normal sexuality, Sexual And Gender Identity Disorders
- 38. Sleep and Sleep Disorders
- 39. Somatoform Disorders
- 40. Statistics /Research Methodology: Basic Concepts.
- 41. Stress and stress management
- 42. Substance Related Disorders
- 43. Suicide and its prevention
- 44. Miscellaneous: Alternate Systems of medicine (Ayurveda) and Psychiatry with special emphasis on Yoga, Pranayama, Vipassana etc. in relation to psychiatry

B. Practical / Clinical concepts:

Post graduate students should do ward rounds every day. Newly admitted patients should be worked up by them and should be presented to the staff during rounds. Students are also expected to work up the case in outpatient department, take a proper clinical history, examine the patient, perform essential diagnostic / therapeutic procedures and interpret them to arrive at a reasonable diagnosis.

Each student will be given clinical responsibility as full time assignment to various areas in rotation. He/she will be given full responsibility of patient care and the record keeping under the supervision of staff members.

The student will initially observe and later perform procedures like electro convulsive therapy (ECT), psychotherapies, narco-analysis / suggestion, bio-feedback, etc independently.

C. Diagnostic procedures:

The student will initially observe and later perform the following diagnostic tests independently. The student will discuss the test results to the staff member and seek further guidance from them.

- a. IQ assessment
- b. Projective tests like Rorschach's ink blot test, Thematic apperception test, Sentence completion test, Draw a person test, etc.
- c. Personality assessment tests
- d. Rating scales
- e. Lobe function tests
- f. Electro encephalogram
- g. Narco analysis

Various academic activities will be supervised, rated periodically by the consultants. Resident will be encouraged to keep a logbook and meticulously make entries.

IV. Teaching and Learning Activities:

Didactic lectures are of least importance. Seminars, journal clubs, symposia, reviews and guest lectures should get priority for developing theoretical knowledge. Bedside teaching, grand rounds, interactive group discussions, clinical demonstrations and clinical case presentations should be the hallmark of clinical / practical learning. Student should have hands-on training in performing various procedures like ECT and also in various counseling, psychotherapeutic skills including behavior techniques. He / she should have the ability to interpret various tests / investigations. Student should have exposure to newer specialized diagnostic / therapeutic procedures concerning his / her subject.

1. Theoretical teaching:

a) Lectures: Lectures are to be kept a minimum. Certain selected topics will be taken as lectures.

- **b)** Journal Club: It should be a monthly meeting in which a resident presents a critical evaluation of a research paper from an appropriate journal. Residents are expected to attend & discuss.
- c) Seminars: There should be a weekly seminar in which the Junior Residents present material on assigned topics in rotation. It should be followed by discussion in which all trainees are expected to participate. Generally the topics covered should be those that supplement the formal teaching program.
- d) **Case Conferences:** A case conference should be held every week where a Junior Resident prepares and presents a case of academic interest by rotation and it is attended by all the members of the department.
- e) Ward Rounds:
 - **i.** Service rounds- Students should do service rounds every day for the care of patients. Any problems in the management of patients should be informed to the consultant and guidance should be sought.
 - **ii. Teaching rounds-** Newly admitted patients should be worked up in detail by the student and should be presented to the consultant and the team having psychologists and psychiatric social workers. The team will guide the student to arrive at a suitable diagnosis and discuss various therapeutic options. Student's knowledge and skills are assessed by the team and student is guided where ever necessary.
- f) **Teaching skills:** Post graduate student must teach MBBS students, Physiotherapy students and Nursing students by taking bed side clinics, tutorials, lectures, etc.
- **g) Psychotherapy Tutorials:** These should be held in small groups supervised by a consultant during which a case is a presented by a resident and psychotherapeutic management is discussed.
- h) Speciality Clinics: Neuro Psychiatry clinic for elderly, Child guidance clinic, Clinic for Senile disorder, Psycho Motor clinic, Deaddiction Memory clinic, Family Counselling.
- i) Continuing Medical Education Programmes(CME): It is recommended that at least 1 state level CME should be attended by each student every year.
- j) Conference: Post graduate student should present at least one research

paper in national or state level conference in the form of oral or poster every year.

- k) Research Forum: There will be periodic meetings of one hour each in which the residents present their plan of research as well as the report of the completed work of their project. The other research scholars/workers in the department also participate in it. The faculty, residents and the non-medical professionals make critical comments and suggestions.
- **I) Extra-mural Activities:** Residents are encouraged to attend certain academic / semi-academic activities in the allied subjects. e.g. seminars / lectures held at departments of sociology, psychology and neurology etc.

2. Practical Training:

Schedule of clinical posting for MD Psychiatry (36 months):

Each student/resident shall be given clinical responsibility as full time assignment to various areas in rotation. The general schedule of clinical posting shall be according to a standardized scheme:

Ward	14 Months
(Including Child & Adolescent Psychiatry, Consultation – Liaison Psychiatry and Drug de-addiction training)	
OPD	14 Months
(Including Child & Adolescent Psychiatry, Consultation – Liaison Psychiatry and Drug de-addiction training)	
Neurology	02 Months
Pediatric Neurology / Child Development Clinic	01 Month
Internal (Gen) Medicine	01 Month
Clinical Psychology	01 Month
Community Psychiatry / Medicine	01 Month
Neuroanatomy & Neuroradiology	15 Days
Mental Hospital / (NIMHANS) Posting	01 Month 15 Days
Child Psychiatry	15 Days

De-addiction Clinic	10 Days
Behaviour Therapy	10 Days
Forensic Psychiatry / Occupational – Rehabilitation Psychiatry	10 Days
Total	36 Months – 00 Days

The Student/Resident will be given full responsibility of the patient care and the record keeping under the supervision of the senior residents and consultants. The resident will also take patients for individual as well as group psychotherapy under supervision.

V. Other criteria to be fulfilled for the degree course:

1. Internal Evaluation:

During the course of three years, the department will conduct a minimum of two tests. Two of them will be annual, one at the end of first year and other at the end of second year. The second test will be a preliminary examination which may be the written papers, practical / clinical and viva – voce. Records and marks obtained in such tests be maintained by the head of the department will be sent to the university when called for. Results of all evaluations should be entered in to PG's log book and departmental file for documentation purposes. Main purpose of periodic examination is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of log book:

Every candidate shall maintain a Log book/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. All the daily activities including the ward rounds and the routine procedures performed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the head of the Department and Head of the institution and presented in the University practical/clinical examination

3. Dissertation :

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

For details regarding DISSERTATION Refer 9.1 to 9.11 of chapter-l

VI. Scheme of Examination

Candidates will be allowed to appear for examination only if attendance (minimum 80%) and internal assessment are satisfactory and dissertation is accepted.

A. Theory: 400 Marks

There shall be four question papers, each of three hours duration. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	Number of questions	Marks for Each question	Total Marks
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper I: Basic Sciences as related to Psychiatry

Neuroanatomy, Neurophysiology, Neurochemistry, Genetics, General and Abnormal Psychology, Social psychology, Anthropology, Ethology and Statistics

Paper II: Clinical Psychiatry

History of psychiatry, Classificatory Systems in Psychiatry, Adult Psychiatric Disorders like Mood disorders, Schizophrenia, Anxiety Disorders, Personality Disorders, Substance Related Disorders, Sexual Disorders, Eating Disorders, Sleep Disorders. Psychosomatic Disorders, Consultation-Liaison Psychiatry, Geriatric Psychiatry, Psychiatric Emergencies, Psycho-oncology, Psychoneuroimmunology, Psychoneuroendocrinology, Chronobiology, Electro-Physiological Procedures and Brain Imaging in Psychiatry.

Paper III: Psychiatric Theory and Psychiatric Specialties.

Child & Adolescent Psychiatric Disorders including Mental Retardation. Mental

Health issues in women including Post-partum Psychiatric Disorders, Measurements in Psychiatry, Psychopharmacology, Electro Convulsive Therapy, Psychosurgery, Psychotherapy, Rehabilitation in Psychiatry, Forensic Psychiatry, Cultural Psychiatry, Community Psychiatry and Ethics in Psychiatry, Crisis intervention and Suicide.

Paper IV: Recent Advances in Psychiatry and Applied Psychiatry related to Neurology and Medicine.

Neurology and Medicine related to Psychiatry, Organic Psychiatric Disorders and Substance Abuse Disorders. Recent advances in various fields of Psychiatry and the fields related to Psychiatry.

Note: The distribution of chapters / topics shown against the papers are suggestive only and may overlap or change.

B. Practical / Clinical Examination: 250 Marks

Aim: To elicit competence in clinical skills and to discuss differential diagnostic / therapeutic aspects.

There will be one Psychiatry long case of 100 marks. There will be three short cases of 50 marks each (one Psychiatry short case and one Neurology / Neuropsychiatry and one child/geriatric psychiatry short case). The format of clinical examination will be same as shown below.

Type of Cases	Number of Cases	Marks
Long Case	1 (Psychiatry)	150
Short Case	3 (50 marks each) (one Psychiatry and one Neurology / Neuropsychiatry & one child or Getiatric, Psychiatry case	150
Total	5	300

C. Viva-Voce examination: 100 Marks

Aim: To elicit candidate's knowledge and investigative / therapeutic skills.

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 content. In addition, candidates may be given Case Reports, Gross Specimens, X-Rays, CT and MR Scan Images, EEG recordings, Lab Reports, Psychological assessment instruments and reports, other instruments used in Psychiatry. Candidates may be asked questions

regarding this. Candidate's knowledge of drugs pertaining to Psychiatry will also be evaluated during viva – voce examination. Viva – voce examination can include discussion on Dissertation also.

2. Pedagogy Exercise and Log-Book: (20 Marks)

Aim : To assess candidate's presentation skills & assess the work record during the training period

a. Candidate is asked to make presentation for 8 - 10 minutes on a topic given before the clinical examination or may be asked to make a presentation for 8 - 10 minutes on the Dissertation topic.

b. The review of log book

D. Maximum Marks

Maximum marks for MD Psychiatry	Theory	Practical (Clinical)	Viva-Voce	Grand Total
	400	300	100	800

E. Passing Criterion:

To pass the examination, the candidate must secure 50% of the marks in each head of theory and practical separately

VII. RECOMMENDED TEXT BOOKS (LATEST EDITIONS)

SI. No	Name of the Text Book	Authors	Publisher
1	Kaplan & Sadock's Comprehensive Text Book of Psychiatry, Ed 10 , 2017	Sadcok BJ and Ruiz P	Wolters Kluwer
2	Synopsis of Psychiatry Ed 11, 2014	Kaplan (HI) and Sadock (B)	Wolters Kluwer
3	Lishman's Organic Psychiatry: Textbook of Neuropsychiatry. Ed 4, 2009	David A.S, Fleminger S.	Wiley- Blackwell

4	Goodman and Gilman's: The Pharmacological Basis of Therapeutics Ed 12, 2011	Brunton LL, Knollman B.C	Mc Graw Hill
5	Munn's Introduction to Psychology Ed 7, 2006	Fernald L.D & Fernald P.S.	AITBS
6	Essentials of Postgraduate Psychiatry Ed 2, 2015	Vyas J.N, Ghimre SR	Paras Medical Publisher
7	Sims' Symptoms in the Mind: Textbook of Descriptive Psychopathology Ed 5, 2014	F. Oyebode	W.B. Saunders
8	Rutter's Child and Adolescent Psychiatry Ed 6, 2015	Michael Rutter and Eric Taylor	Wiley- Blakwell
9	Clinical Psychiatry Ed 5, 1992	Mayer-Gross Slater and Roth	Bailliere Tindall London
10	Text Book of Post Graduate Psychiatry Ed 3, 2016	Vyas JN, Ghimre S.R	Jaypee Brothers
11	Shorter Oxford Text Book of Psychiatry Ed 7, 2018	Harrison P, Cowen P, Burn T, Fazel M	Oxford University Press
12	Text Book of Psychiatry Ed 7, 2011	Niaraj Ahuja	Jaypee Brothers
13	Fish's Clinical Psychopathology: Signs and Symptoms in Psychiatry Ed 3, 2007	FJ Fish, Casey P, Kelly B	RCPsych Publications
14	ICD 10Classification of Mental and Behavioural Disorders, Clinical Description and Diagnostic Guidelines, 2007	World Health Organization Geneva	Oxford University Press
15	Mental Health Care Act. (2017)	Only soft available at present	
16	American Psychiatric Association Practice Guidelines for the Treatment of Psychiatric Disorders Compendium Ed 1, 2006	American Psychiatric Association	American Psychiatric Association Washington DC
17	Diagnostic and Statistical Manual of Mental Disorders -5 (DSM –5), 2013	American Psychiatric Association	American Psychiatric Association Washington DC
18	Stahl's Essential Psychopharmacology: Neuroscientific Basis and Practical Applications. Ed 4, 2014	Stephen M. Stahl	Cambridge University Press

19	Abnormal Psychology and Modern Life. Ed 11. 1999	Robert C. Carson, Don C. Fowles	Pearson Education
20	Walsh's Neuropsychology: A Clinical Approach. Ed 5. 2005	David Darby, Kevin William Walsh	Elsevier Churchill Livingstone
21	Text book of Neuroanatomy Ed 9, 2014	I.B. Singh	Jaypee

VIII. RECOMMENDED JOURNALS:

SI. No.	Name of the journal
1	Indian Journal of Psychiatry
2	American Journal of Psychiatry
3	Archives of General Psychiatry (JAMA Psychiatry)
4	British Journal of Psychiatry
5	Psychiatric Clinics of North America
6	Indian Journal of Clinical Psychology
7	Acta Psychiatrica Scandinavica
8	Indian Journal of Psychological Medicine
9	Journal of Clinical Psychiatry

POST GRADUATE DEGREE COURSE M.D IN RADIO-DIAGNOSIS

I. GOALS

The goal of the course is to orient the students on various aspects of imageology by way of theory and practical training in the diseases of various systems of the human body. They should be able to apply knowledge and skills at secondary and tertiary levels of medical care. The postgraduate training course would be to train a MBBS doctor who will:

- Practice efficiently and effectively the speciality, backed by scientific knowledge and skill base.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing education in the speciality.
- Be a motivated 'teacher'- defined as specialist keen to share his knowledge and skill with a colleague or a junior or any learner.

II. OBJECTIVES

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the subheadings

1. Knowledge:

- Describe etiology, pathophysiology, principles of diagnosis and management of common problems including emergencies, in adults and children.
- Describe common malignancies in the country and their management including prevention.
- Demonstrate understanding of basic sciences relevant to this speciality.
- Identify social, economic, environmental and emotional determinants in given case, and take them onto account for planning therapeutic measures.
- Recognize conditions that may be outside the area of his speciality / competence and to refer them to proper specialist.
- Advise regarding the operative or non-operative management of the case

and to carry out this management effectively.

- Update oneself by self study and by attending courses, conferences and seminars relevant to the speciality.
- 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.

2. Skills

- Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition.
- Provide basic and advanced life saving support services (BLS& ALS) in emergency situations.
- Undertake complete patient monitoring including the care of the patient.

3. Human values, Ethical practice and Communication abilities

- Adopt ethical principles in all aspects of his/her practice. Professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- 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 patient's right to information and right to seek a second opinion.

4. Optimum patient safety

• The radiology post graduate student should be able to relate the safety measures predominantly to the modality work areas: sonography, CT,

MRI, general radiology and fluoroscopy, interventional radiology, breast imaging, and pediatrics imaging.

- MEASURES TO BE TAKEN BY THE POST GRADUATE STUDENT TO ENSURE OPTIMUM PATIENT SAFETY:
- a. Optimize radiation exposure
- b. Accountability for radiation protection by healthcare providers
- c. Provides opportunity for informed discussions between patients and healthcare providers.
- d. Strive to deliver the lowest dose possible to create diagnostic-quality images and follow the ALARA (as low as reasonably achievable) principle.
- e. Assessing the patient's renal and hepatic function and changing the protocol according to the results.
- f. Timely reporting of critical tests, communication of critical results, medication labeling, hand hygiene, preventing infections, medication reconciliation, reducing harm from falls, and performing universal protocols for preventing surgery that involves the wrong site, the wrong procedure, or the wrong person
- g. Critical tests & examinations that are so critical that, regardless of the findings, a telephone or face-to-face report is communicated within a predetermined time.
- h. Radiographic studies should be labeled with the correct patient identification and right or left markers before the patient begins the radiologic examination to avoid unnecessary radiation exposure and unnecessary administration of IV contrast material.
- i. Perform medication reconciliation by examining the list of the patient's current medications and ensuring that any medication that would be administered within the radiology department will not result in an adverse event for the patient.

5. Breaking bad news

In every area of clinical practice, it is always difficult and awkward to break bad news to a patient, whether at the time of diagnosis, recurrence, disease progression. Bad news is defined as "any news that adversely and seriously affects an individual's view of his or her future." In our department we follow the SPIKES protocol for breaking the bad news.

- S = SETUP. Set up the situation so it has a good chance of going smoothly. Turn your pager off or give it to someone else so you are not interrupted. Sit down, make eye contact, and get reasonably close to patient. Anticipate that the patient will be upset and have some tissues ready.
- P = PERCEPTION. Find out the patient's perception of the medical situation. What has he been told about the disease? What are his expectations of treatment? Correct any misconceptions or misunderstandings the patient may have.
- I = INVITATION. Find out how much information the patient wants. These days most patients want a lot of information but this is not universally true, especially as the disease progresses and patients may want to focus on "What do we do next?"
- K = KNOWLEDGE. Use language that matches the patient's level of education. Be direct. Give a warning that bad news is coming: "I have some serious news to tell you." This will allow the patient to prepare psychologically. After giving the news, stay quiet for at least 10-15 seconds-resist the urge to tell the patient how to feel. Give the patient time to absorb the information and respond.
- E = EMPATHIZE. Use empathic statements to respond to patient emotions. This will assist in patient recovery and dampen the psychological isolation which the patient experiences when they hear the bad news. If a patient begins to cry, wait until he is ready to talk; Ask if the patient has questions or concerns and keep asking until he says "no."
- S = SUMMARIZE AND STRATEGIZE. Summarize the clinical information and make a plan for the next step, which may be further testing or discussion of treatment options. Be as concrete as possible and check on the patient's understanding of what has been discussed.

III. Course contents.

i) Theory

1) Basic Sciences (Radiation physics and Radiobiology)& Newer imaging techniques:

Radiological anatomy, physiology and Radiography, including fundamentals in electricity and electro magnetic induction, ammeter, voltmeter and galvanometer, transformers, rectifiers, timers, x-ray production and other aspects of x-rays. Electro magnetic radiation, units of radiation, interaction, x-ray film, intensifying screens and other x-ray appliances, dark room procedures etc. IITV and cine fluorography, tomography, radioactive isotopes and uses, instrumentation in nuclear medicine, MMR and radiation protection.

Radiological anatomy, physiology and pathology of different systems of the body and radiographic techniques concerned to each system.

Physics of ultrasound, CT and MRI.

Basic of Nuclear Medicine, PET & SPECT.

2) Respiratory system:

Includes the following methods of investigations like conventional radiographs, fluoroscopy, USG and CT. Interpretation of chest wall, diaphragm, pleural and air way diseases, pulmonary vasculature, pulmonary infections, pulmonary neoplasms, diffuse lung disease, mediastinal disease, chest trauma, post operative lung and intensive care.

- 3) Alimentary & Hepatobiliary system:
 - a) Alimentary system- Congenital anomalies of GI tract, diseases and disorders of mouth, pharynx, esophagus, stomach, small intestine, large intestine, disease of omentum and mesentery, acute abdomen and abdominal trauma. Newer methods like Isotope study, CT and MRI.
 - b) Hepatobiliary system- Disease and disorders, newer methods of imaging hepatobiliary and pancreatic system like, Isotope study, ultrasonography, arteriography, spiral CT and MRI.
- 4) Head and neck, spinal column and skull:

Includes radiological dimension and imaging of various diseases and disorders of the above system. Investigative procedures of congenital lesions, vascular lesions, infective lesions, metabolic lesions, traumatic lesions and neoplasia of the central nervous system including plain film, arteriography, CT and MRI.

Disease and disorders of spinal cord lesions including congenital lesions.

Interventional procedures.

5) Cardiovascular system:

Role of radiological imaging by different techniques including DSA and interventional procedures.

Diseases and disorders of cardiovascular system including congenital conditions and the role of imaging by conventional , ultrasound, echo, doppler, CT, MRI, angio, DSA and radio nuclide studies.

6) Endocrinal system:

Imaging of disorders, disease and congenital conditions of endocrinal glands pituitary, adrenal, thyroid, para thyroid and pancreas.

Newer methods of imaging like dynamic contrast study and interventional procedures including embolisation.

7) Genito Urinary system:

Imaging – conventional, ultrasound, CT and MRI of various disease and disorders including congenital conditions of genitor-urinary system.

Role of interventional imaging.

8) Musculo Skeletal system:

Role of conventional, ultrasound, radio nuclide studies, CT and MRI of disease, disorders and congenital conditions of muscles, soft tissue, bones and joints.

9) Soft tissue Radiology:

Include various soft tissue disorders and diseases and role of imaging.

10) Interventional radiology:

Includes all procedures like interventional imaging and interventional treatment including CT and USG guided biopsy and FNAC, angioplasty, aneurysmal coiling, stenting and embolization etc.

11) Recent trends and Advances:

Includes all imaging information that is published in national and International Journals and references, vascular Ultrasound, Mammography, PACS, digital x-rays, CT, MRI and Nuclear medicine, PET CT.

ii) Clinical / Practical:

The training of postgraduate shall be in 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 should be required to participate in the teaching and training programme of undergraduate students. Training should include involvement in laboratory and experimental work, and research studies.

IV. Teaching and Learning Activities

A) Theoretical Teaching

- **1. Lectures**: lectures are to be kept a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.
 - a) Didactic lectures: Recommended for selected common topics for postgraduate students of all specialties. Few topics are suggested as examples:
 - i) Bio-statistics.
 - ii) Use of library.
 - iii) Medical code of conduct and medical ethics.
 - iv) National health and disease control programs.
 - v) Communication skills etc.

These topics may preferably be 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. Jaundice, diabetes mellitus, stroke, bone disorders etc.
- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the logbook with relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. The time table for the subject with names of the students and the moderator should be announced in advance.
- 3. Subject seminar: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the logbook with relevant details. The presentations would be evaluated using checklists and would carry weightage for internal assessment. The time table for the subject with names of the students and the moderator should be announced in advance.

- 4. **Case discussion** : Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the logbook with relevant details. The presentations would be evaluated using checklists and would carry weightage for internal assessment. The time table for the case presentation with names of the students should be announced in advance.
- 5. Clinico Pathological conference : 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 CPCs.
- 6. **Inter Departmental Meetings**: Strongly recommended particularly with departments of Neurology, Surgery, Orthopedics and Medicine at least once a month. These meetings should be attended by postgraduate students and relevant entries must be made in the logbook.

Interesting cases and imaging modalities will be discussed. Emphasis should be given for the radiological differential diagnosis.

- 7. Mortality Meeting: Will be conducted twice in year. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records will be discussed in detail during this meeting.
- 8. Teaching Skills: Post graduate students must teach under graduate students (Eg .Medical,Radiography,Nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. assessment is made using a check list by medical faculty as well as by the students. Record of the participation is to be kept in a logbook. Training of post graduate students in Educational Science and Technology is recommended.
- **9. Continuing Medical Education Programmes (CME):** Recommended that at least 1 state level CME programmes should be attended by each student during the course.
- **10. Conferences:** Attending conference is compulsory.Post -graduate student should attend at least one National and one state level conference during the course.
- **11. Research activities**: Post graduate students to be encouraged to carry research activities in the department other than dissertation work.
It is mandatory for the degree students to present one paper/poster in a National/State level conference and publish an article in a National / International journal, so as to make him / her eligible to appear at the post graduate degree examination.

B) Clinical / Practical Training:

1. Rotational posting in other Departments:

1st year : Anatomy

2nd year : Emergency

3rd year : Nuclear Medicine, PET CT

V. Other Criteria to Fulfill for the Degree Course:

1. Internal evaluation:

During the course of three years the dept will conduct

- A. Basic sciences and physics examination of the 1st year PG students at the end of 1st year.
- B. Monthly system wise tests for 2nd and 3rd year PG students.
- C. One preliminary and one final examination.

The test may include the written papers, Practicals/ clinicals and viva-voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the university when called for.

Results of all evaluations should be entered into P.G's diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skill and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of log book:

Every candidate shall maintain a Log Book/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 . All the procedures performed by the post graduate students should be entered in the Log Book. All the daily activities including the

ward rounds and the routine procedures performed on day to day basis should be entered in the Log Book and it should be verified and signed by the faculty member. The Log Book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the University practical/clinical examination.

3. Dissertation:

Every candidate pursing MD 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.refer9.1to 9.11 of chapter-I.

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory and dissertation is accepted.

A. Theory : 400 Marks

There shall be four papers, each of three hours duration. Total marks of each paper will be 100.Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No of Questions	Marks for each question	Total Marks
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper – I

Basic sciences as applied to Radio-Diagnosis – Radiological Anatomy, Physiology, Pathology, Radiography, Radiation Physics and Biology. Basics of Ultrasound CT, Nuclear Medicine, PET CT & MRI.

Paper – II

Cardiovascular system, Respiratory system, GIT (including Hepato biliary), Endocrine, Mammography, Lymphatic System, Arteriography, Phlebography.

Paper – III

Genitourinary, Retroperitoneum, Musculoskeletal System, Obst. & Gynaec,

Paper – IV

- 1. CNS including head and neck
- 2. Interventional Radiology
- 3. Recent advances

Note: The distribution of chapters / topics shown against the papers are suggestive only.

B. Clinical / Practical Examination: 400 Marks

To elicit competence in clinical skills and to discuss differential diagnostic and therapeutic aspects .

Types of Cases	No. of Cases	Marks
Long Case	1	100
Short Cases	2 (70 marks each)	140
Total Spotters	30x2	60
Total		300

C. Viva-voce Examination 100 Marks

Aims: To elicit candidate's knowledge and investigative/therapeutic Skills.

1. Viva-voce examination – 100 marks

(i)All examiners will conduct viva-voce conjointly on candidate's comphrension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be given case reports , X-rays, ultrasound, CT scan & MRI images for interpretation and questions on these as well as use of instruments will be asked. Student's knowledge on use of instruments and drugs pertaining to the Radiodiagnosis department will also be evaluated during viva-voce examination. It includes discussion on dissertation also.

(ii) Candidate is asked to make a presentation for 8 -10 minutes on the dissertation topic and the review of Log Book.10 Marks

D. Maximum Marks:

Maximum Marks for M.D(Radiodiagnosis)	Theory	Practical	Viva	Grand Total
	400	300	100	800

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

SI.	Name of the Book	Name of the	Publisher
No		author	
1	Text Book of Radiology and Imaging Vol	Sutton	Churchill
	T & Vol II		Livingstone
2	Diagnostic Radiology Vol I , II	Ronald G	Churchill
		Grainger	Livingstone.
3	Positioning in Radiography	Clark	CBS
4	Ultrasonography in	Callen	Saunders
	Obstetrics & Gynecology		
5	Radiographic Anatomy	Butler	Cambridge
6	Principles of nuclear medicine	Wagner	W.B.Saunders
7	Diagnostic Radiology CT & MRI of	Haaga	MOSBY
	whole body Vol.I & II.		
8	Pediatric x-ray diagnostic vol. I & II	Caffey's	Churchill
			Livingstone.
9	Skeletal Radiology	Yochum	Lippincott
10	Chest Radiology	Fraser & Muller	Saunders
		(Synopsis)	
11	Alimentary Tract and Imaging	Gore	Saunders
12	MSK Radiology	Kaplan	Saunders
13	Diagnostic Ultrasound Vol. I & II	C.Rumack,	Elsevier.
14	Christensen/s Physics of Diagnostic	Curry TC 9	Los & fabigar
14	Padiology	Dowdow LE	
	Kaulology	Downey J.L.,	
15	Pediatric x-ray diagnostic vol.1& II	Caffey's,	Churchill
			Livingstone.
16	Colour Doppler	Zwiebel	Elsevier
		Allen	Churchill
			Livingstone.
17	Radiological Procedures	Bhushan Lakhkar	Avichal
		Whitehouse	
			Blackwell
18	Diagnostic Ultrasound Vol. I & II	Cosgrove,	Churchill
			Livingstone.
19	Diagnostic Radiology CT & MRI whole	Lee & Sagel,	Ubran
	body Vol I & II		Schwarzenberg
20	Text book of Neuro imaging	Osborn,	MOSBY.
21	Radiology review Manual (Differentials)	Danhert	Lippincott

VIII. RECOMMENDED JOURNALS:

1)	Indian Journal of Radiology and Imaging
2)	Clinical Radiology
3)	British Journal of Radiology
4)	American Journal of Roentgenology
5)	Radiology clinics in North America
6)	Recent Advances in Radiology and Imaging
7)	Text book of Radiology
8)	Lancet
9)	Journal of Diagnostic Medical Sonography
10)	Seminar in Ultrasound
11)	Clinical Nuclear Medicine
12)	Journal of Vascular and Interventional Radiology
13)	Journal of computer assisted Tomography.
14)	Radiographics & Radiology (RSNA)
15)	American Journal of Neuroradiology

POST GRADUATE DEGREE COURSE (M.D.) IN PULMONARY MEDICINE

I. GOALS:

The Postgraduate training course would be to train a MBBS doctor who will:

- Practice efficiently and effectively, backed by scientific knowledge and skill base.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing education in the speciality irrespective of whether he is in a teaching institution or in the speciality.
- Be able to diagnose and manage common respiratory problems in the society, including emergencies, in adults and children.
- Be able to perform common diagnostic as well as therapeutic interventions including FNAC, lung biopsy, pleural biopsy, intercoastal drainage procedures, Fibreoptic Bronchoscopy and Medical Thoracoscopy.
- Be able to initiate and wean the patients with acute respiratory failure from medical ventilation.
- Be able to interpret polysomnography reports in sleep disordered patients.
- Be able to practice Revised National Tuberculosis Control Programme including PMDT in the community.
- Be a motivated 'teacher'- defined as a specialist keen to share his knowledge and skills with a colleague or a junior or any learners.

II. OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The Objectives may be considered under the subheadings.

- 1. Knowledge (Cognitive domain)
- 2. Skills (Psycho motor domain)
- 3. Human values, ethical practice and communication abilities.

1. Knowledge:

- Describe aetiology, pathophysiology, principles of diagnosis and management of common respiratory problems including emergencies, in adults and children.
- Describe aetiology, pathophysiology, and principles of diagnosis and management of uncommon respiratory problems in the society.
- Describe indications and methods for fluid and electrolyte replacement therapy including blood transfusion.
- Describe common thoracic malignancies in the country and their management including prevention.
- Demonstrate understanding of basic sciences relevant to the respiratory speciality.
- Identify social, economic, environmental and emotional determinants in a given case, and take them into account for planning therapeutic measures.
- Recognize conditions that may be outside the area of his/her speciality/ competence and to refer them to the proper specialist.
- Advise regarding the operative or non-operative management of the respiratory cases and to carry out this management effectively.
- Update oneself by self study and by attending courses, conferences and seminars relevant to the speciality.
- Teach and guide his team, colleagues and other students in understanding the speciality.
- 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 forums.
- Understand the importance of HIV infection and AIDS on the respiratory system.
- Participate in the Revised National Tuberculosis Control Programme (RNTCP) including PMDT and disseminate the knowledge to the patients and their relatives.
- Participate and practice RNTCP and NACO programmes.

- Understand the importance of communication and collegial interaction between the consultant and primary physician.
- Demonstrate professionalism in all interactions with patients and their families, other physicians and all other members of the health care team.
- Appreciate the need for a commitment to lifelong self-education and evidencebased medical practice in order to provide the highest quality of care.
- Recognize the clinical manifestations of acute respiratory failure and manage them effectively including mechanical ventilation.
- Recognize respiratory complications in a surgical patients and manage their complications.
- Able to assess the patients for lung transplantations and know their part operative complications.

2. Skills:

The Post-graduate programme prepares the students to develop interviewing skills in Pulmonary Medicine-history taking, performing physical examination, and formulating diagnostic and therapeutic plans.

i) Cognitive Skills:

- Take a proper clinical history, examine the patient, perform essential diagnostic procedures and other relevant tests and interpret them to come to a reasonable diagnosis about the condition.
- Performing clinical consults on in-patients and out-patients.
- Generating reports of clinical encounters and letters to referring physicians.
- Provide basic and advanced life saving support services (BLS & ALS) in emergency situations.
- Undertake complete patient monitoring including care of the patient.
- Learn practical applications of pulmonary function tests:
 - a. Interpret pulmonary function tests, including spirometry, lung volumes, diffusing capacity and bronchoprovocation tests.

- b. Become familiar with the structure and function of the pulmonary function laboratory.
- Radiologic studies:
 - i) Learn proper interpretation of chest x-ray and thoracic CT scans.
 - ii) Learn to formulate a differential diagnosis based upon the interpretation.
 - iii) Learn to interpret chest ultrasonographic findings in various pulmonary abnormalities.
 - iv) Learn to interpret Bronchography films.
 - v) Learn to interpret ventilation perfusion scans of lungs.
- Develop expertise in respiratory care:
 - i) Interact with respiratory care personnel.
 - ii) Become familiar with structure and function of a respiratory care department.
- Become familiar with the out patient clinics in related disciplines and pulmonary subspecialties including:
 - i) Bronchial asthma
 - ii) COPD
 - iii) Sarcoidosis/ILD
 - iv) Allergic disorders.
- Learn practical applications of sleep studies, including polysomnography.
- Learn about various modes of mechanical ventilation including newer modes of ventilation.
- Learn about maintaining the patient on mechanical ventilation, weaning and complications there of.
- Learn graphic interpretation of mechanical ventilation.
- Learn interpretation of acid-base gas disturbances.
- Learn interpretation of ECG.

ii). Procedural Skills:

Familiarity with pulmonary and critical care medicine procedures.

- Observe, assist and perform Fibreopticbronchoscopic procedures for therapeutic and diagnostic purposes:
 - i. Bronchoalveolar lavage.
 - ii. Endobronchial biopsies and needle aspiration.
 - iii. Transbronchial biopsies and needle aspiration.
 - iv. Foreign body removal.
 - v. Other related procedures.
- Observe and assist in medical thoracoscopy procedure including plural biopsy, talc insufflation and adhesiolysis.
- Perform thoracentesis and pleural biopsies.
- Perform fine needle aspiration biopsy (FNAC) of lung and mediastinal tumours.
- Perform Tru-cut biopsy of the lung and mediastinal tumours.
- Perform pleurodesis procedures.
- Perform intercoastal tube drainage procedures.
- Perform Allergy testing and advice regarding Immunotherapy.
- Perform ultrasonography guided pleural fluid aspirations or biopsy of mediastinal and lung tumours.
- Perform CT guided pleural fluid aspirations, or biopsy including FNAC of mediastinal and lung tumours.
- Observe and assist in chest ultrasonographic procedures for various lung pleural diseases.
- Learn and perform endotracheal intubation.
- Learn to initiate and maintain the patient on mechanical ventilation.
- Learn to wean off the patient from mechanical ventilation.

- Learn to initiate the patient on non-invasive ventilation.
- Perform arterial puncture for ABG analysis, central venous lines placement.
- Perform sleep study (polysomnography) and interpret the analysis.
- Perform Ziehl- Neelsen staining technique for acid fast bacilli (AFB).
- Skill management: For the above procedures, the post-graduate students must become familiar with:
 - i. Indications for the various procedures.
 - ii. Educating patients regarding the risk benefit ratio of each procedure and the

availability of alternate procedures.

- iii. Medical preparation of the patient for each procedure.
- iv. Possible complications.
- v. Specimen processing and data interpretation.
- vi. Patient monitoring during and after the procedure.
- vii. Record keeping and generation of clinical reports.

iii)Tertiary Objectives:

Once trained, the post graduate student should be able to:

- i) Set up pulmonary unit independently or in hospitals and medical colleges.
- ii) Carry out and help conduct research in Pulmonary and Medical sciences,

communicate the results of such research at medical conferences and publish in medical journals.

iii) Guide research projects of students and critically evaluate the results of their investigations.

3. Human values, Ethical practice and Communication abilities

• Adopt ethical principles in all aspects of his/her practice; professional honesty

and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.

- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his team in a congenial working atmosphere.
- Apply high moral and ethical standard 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 patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS:

The course content for the degree course is exhaustive and is not limited to the respiratory system. Basic diseases in Internal Medicine also forms the part of this course contents.

i). Theory:

i.Basic Sciences including Anatomy, Physiology, Pathology, Microbiology

and Pharmacology in relation to Respiratory System.

- ii. Arterial blood gas analysis, acid-base and electrolytes disturbances.
- iii. Tuberculosis

-Pulmonary tuberculosis

-All forms of Extrapulmonary tuberculosis

-Drug resistance in tuberculosis

- MDR, XDR

-Atypical mycobacteriosis

-Newer diagnostic methods

- -Newer drugs in tuberculosis
- -Allied topics in tuberculosis
- -Surgical aspects of tuberculosis
- RNTCP, PMDT
- -Recent advances in tuberculosis
- -Pregnancy and tuberculosis
- -HIV infection and tuberculosis
- iv) Non-Tubercular Respiratory Diseases
 - 1. Respiratory physiology
 - 2. Immunology of respiratory diseases
 - 3. Respiratory pharmacology
 - 4. Respiratory muscles
 - 5. Pulmonary surfactant
 - 6. Upper respiratory tract infection
 - 7. Allergic rhinitis and sinusitis
 - 8. Lung inflammation, injury and repair.
 - 9. Embryology and development of the respiratory system
 - 10. Developmental anomalies of the respiratory system
 - 11. Genetic approach to lung diseases.
 - 12. Pneumonias
 - 13. Atypical pneumonias
 - 14. Fungal infections of the lungs
 - 15. Viral infections of the lungs
 - 16. H1N1 and Avian Flu pneumonia

- 17. Protozoal infections of the lungs
- 18. Zoonotic diseases of the lungs
- 19. Helminthic diseases of the lungs
- 20. Aspergillus lung diseases
- 21. Lung abscess
- 22. Bronchiectasis
- 23. Cystic fibrosis
- 24. Chronic obstructive pulmonary disease.
- 25. Surgery in COPD
- 26. Bronchial asthma
- 27. Pulmonary eosinophilia, PIE syndromes
- 28. Pulmonary arterial hypertension
- 29. Parasitic diseases of the lungs
- 30. Sarcoidosis
- 31. Wegner's granulomatosis
- 32. Cigarette smoking and lungs
- 33. Occupational lung disorders
- 34. Environmental disorders of the lungs
- 35. Drug induced lung diseases
- 36. Interstitial lung diseases
- 37. Connective tissue diseases and the lungs
- 38. Depositional disorders of the lungs
- 39. Pulmonary hemorrhage syndromes
- 40. Disorders of the pulmonary circulation

- 41. Hypoventilation and hyperventilation syndromes
- 42. Sleep physiology and sleep apnea syndromes
- 43. Neoplasms of the lungs
- 44. Metastatic malignant tumours
- 45. Aspiration syndromes of the lungs
- 46. HIV infections and AIDS
- 47. Pulmonary complications in HIV and AIDS
- 48. Evaluation of respiratory impairment/ disability
- 49. Acute respiratory failure
- 50. Type II Respiratory Failure
- 51. Acute Respiratory Distress Syndrome
- 52. Preoperative evaluation of a surgical case
- 53. Respiratory failure in surgical case
- 54. Respiratory failure in poisoning cases
- 55. Respiratory failure in neurosurgical emergencies
- 56. Mechanical ventilation
- 57. Noninvasive ventilation
- 58. Diseases of the pleura
- 59. Pneumothorax
- 60. Diseases of the mediastinum
- 61. Diseases of the diaphragm
- 62. Disorders of the spine and chest wall including kyphoscoliosis
- 63. Thoracic trauma
- 64. Respiratory emergencies –respiratory failure, hemoptysis, aspiration, drowning, pulmonary edema, pneumonias, pneumothorax, chest trauma.

- 65. Electrical burns
- 66. Hanging
- 67. Respiratory diseases at high altitude, air travel, aviation and space.
- 68. Lung physiology and diseases in deep sea diving and drowning.
- 69. Sepsis and septic syndrome
- 70. Critical Care and Assisted Ventilation:
 - i. Resuscitation of the critically ill including MODS
 - ii. Ventilatory applications, assessment and monitoring
 - iii. Cardiopulmonary mechanics
 - iv. Ventilatory care and support
 - v. Weaning off ventilation
 - vi. Comprehensive care of the comatose
- 71. Respiratory manifestations of systemic disorders
- 72. Prevention of lung diseases
- 73. Computed tomography and MRI of the thorax
- 74. Nuclear medicine for chest physicians
- 75. Pulmonary function testing including diffusion study and total lung volumes estimation.
- 76. Bronchoscopy and related procedures
- 77. Bronchial stenting
- 78. Radiographic techniques in respiratory medicine
- 79. Medical thoracoscopy
- 80. Clinical exercise testing
- 81. Air pollution and lungs

- 82. Lungs in extreme environments
- 83. Respiratory diseases during pregnancy
- 84. Pulmonary complications of heart disease
- 85. Lung in obstetrics and gynaecological diseases
- 86. Pulmonary complications of endocrine diseases
- 87. Pulmonary complications of neuromuscular diseases
- 88. Pulmonary complications of hematologic diseases
- 89. Pulmonary complications of abdominal diseases
- 90. Pulmonary complications of organ transplantation and primary immunodeficiencies
- 91. Acute lung injury due to toxins, gases, fumes and burns
- 92. Allergic urticaria
- 93. Angioedema and anaphylaxix
- 94. Food allergy
- 95. Ocular allergy
- 96. Insect allergy
- 97. Adverse drug reactions
- 98. Paediatric Pulmonology:
 - a) Respiratory problems in children
 - b) Infective pneumonias
 - c) Childhood tuberculosis
 - d) Neonatal distress syndrome
 - e) Bronchopulmonary dysplasia
 - f) Congenital malformation

- g) Bronchial asthma
- h) Specific management problems in children
- 87. Pulmonary rehabilitation
- 88. Lung transplantation
- 89. Smoking hazards and cessation
- 90. Patient education and compliance
- 91. Care at the end of life for patients with respiratory failure
- 92. Diabetes mellitus and complications
- 93. Ischemic heart diseases
- 94. Rheumatic heart diseases
- 95. Valvular heart diseases
- 96. Pericardial effusion
- 97. Myxoedema and thyrotoxicosis
- 98. Addison's disease
- 99. Hypertension
- 100. Alcoholic liver diseases
- 101. Nephrotic syndrome
- 102. Congestive cardiac failure
- 103. Acute and chronic renal failure
- 104. Literature review and statistics
- 105. Medical ethics
- 106. Evidence based medicine in Respiratory Medicine
- 107. Pulmonary Radiology and Imaging
 - Interpretation of plain radiograph, contrast studies, CT scan, ultrasound

examination, bronchogram.

- Interpretation of ventilation/perfusion scans.
- Interpretation of Pulmonary Angiography

ii). Practical:

- Pulmonary functions testing
- Spirometry
- Diffusion study
- Bronchodilator and Bronchoprovocation testing
- Exercise testing
- Measurement of airway resistance
- Bronchoscopy and allied procedures
- Intercoastal tube drainage procedure
- Medical Thoracoscopy and allied procedures.
- Pleurodesis
- Thoracentesis
- Pleural biopsy
- Lung biopsy
- Arterial puncture
- FNAC of lung and mediastinum
- CT guided/ USG guided biopsy of lung/ mediastinum
- Allergy testing
- Immunotherapy
- Tuberculin testing
- Hypersensitivity skin testing

- Endotracheal intubation
- Cardiopulmonary resuscitation
- Pulmonary artery catheterization
- Assisted ventilation
- Respiratory physiotherapy including IBBB and nebulization
- Endotracheal intubation
- Initiation, maintenance and weaning of mechanical ventilation
- Central venous line placement
- Ziehl-Neelsen staining of sputum for mycobacteria (AFB).
- Gram staining of the slides
- Sleep studies and Polysomnography.
- Miscellaneous procedures required in patient care.
- Basic life support.
- Advanced life support.

IV. TEACHING AND LEARNING ACTIVITIES:

A. Theoretical Teaching:

- **1.** Lectures: Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.
- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.
- **3. Subject Seminar:** Recommended to be held once a week. All the PG 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 timetable for the

subject with names of the students and the moderator should be announced in advance.

- 4. Case Discussion: Recommended to be held once a week. All the PG 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 timetable for the case presentation with names of the students should be announced in advance.
- 5. Ward Rounds: Ward rounds may be service or teaching rounds.

a). Service Rounds: Postgraduate students should do service rounds every day for the care of the patients. Newly admitted patients should be worked up by the post graduate student and presented to the faculty members the following day.

b). Teaching Rounds: Every unit should have 'grand rounds' for teaching purposeat the bed side. A diary should be maintained for day-to-day activities by the post-graduate students.

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

- 6. Clinico-Pathological Conference: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 CPCs.
- 7. Inter Departmental Meetings: Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a month. These meetings should be attended by post-graduate students and relevant entries must be made in the Log Book.

Pathology: Interesting cases shall be chosen and presented by the postgraduate students and discussed by them as well as the senior staff of Pathology department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advanced immuno-histo-chemical techniques, the burgeoning markers, other recent developments can be discussed.

Radio-diagnosis: Interesting cases and the imaging modalities should be discussed. Emphasis should be given for the radiological differential diagnosis.

- 8. Mortality Meeting: The mortality meeting should be conducted in the department every month. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records will be discussed in detail during this meeting.
- 9. Teaching Skills: Post-graduate students must teach under graduate students (eg. Medical, Nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. Assessment is made using a checklist by medical faculty as well as by the students. Record of their participation is to be kept in Log Book. Training of postgraduate students in Educational Science and Technology is recommended.
- 10. Continuing Medical Education Programmes (CME): Recommended that at least 1state level CME programmes should be attended by each student during the course.
- 11. **Conferences:** Attending conference is compulsory. Post-graduate student should attend one national and one state level conference during the course.
- 12. **Research Activities:**The Post-graduate students to be encouraged to carry out research activities in the department other than dissertation work. It is recommended by me, That each candidate should publish at take one scientific paper in peer review journal before appearing for the theory university examination.

B) Clinical / Practical Training:

1. Rotational Postings in other Departments:

i). In the parent department of Pulmonary Medicine- 30 months

ii). Department of Medicine	- 2 months
iii). Cardiology	- 1 month
iv). Department of Radio- diagnosis	- 1 month
v). Casualty and ICU (2 weeks each)	- 1 month
vi). Cardio-Thoracic surgery	- 1 month

V. Other Criterias to be Fulfilled for the Degree Course:

1. Internal evaluation:

During the course of three years, the department will conduct three tests. Two of them will be annual, one at the end of first year and other at the end of second year. The third test will a preliminary examination which may be held three months before the final examination. The test may include the written papers, practicals / clinicals and viva-voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the University when called for.

Results of all evaluations should be entered into P.G's diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/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. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures performed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the University practical/clinical examination.

3. Dissertation:

Every candidate pursuing MD 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.

For details regarding DISSERTATIONRefer 9.1 to 9.11 of Section - 1.

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance is minimum 80% and internal assessments are satisfactory and dissertation is accepted.

i)Theory:

There shall be four papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No. of	Marks for each question	Total Marks
	Questions		
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper I: Basic Sciences including Anatomy and Physiology pertaining to Respiratory System.

Paper II: Non Tubercular Respiratory Diseases

Paper III: Tuberculosis- Pulmonary and extra pulmonary, and General Medicine

Paper IV: Recent advance in Pulmonary Medicine including critical care Medicine.

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

B. Clinical / Practical Examination:

300 Marks

To elicit competence in clinical skills and to discuss differential diagnostis and therapeutic aspects.

1) Types of Cases	No. of Cases	Marks
i) Long Case	1	100
ii) Short Cases	2 (75 marks each)	150
iii) Spotters	2 (25 marks each)	50
Total		300 Marks

C. Viva- Voce Examination & Pedagogy (80 + 20):

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills.

Viva-voce examination -

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 given case reports, spirometry, ABG, gross specimens, histo-pathology slides, X-rays, ultrasound, CT scan images, PFT report, ventilation-perfusion scan images, polysomnography reports etc., for interpretation and questions on these as well as use of instruments will be asked. Student's knowledge on use of instruments and drugs pertaining to the respiratory system will also be evaluated during viva-voce examination. It includes discussion on dissertation also.

Pedagogy Exercise and Dissertation Discussion

- (i) Candidate is asked to make a presentation for 8 10 minutes on a topic given at the beginning of clinical examination after consultation with the external examiners.
- (ii) Candidate is asked to make a presentation for 8 10 minutes on the dissertation topic and the discussion on dissertation topic with the external examiners will take place.

D. Maximum Marks:

Maximum marks for M.D. Pulmonary Medicine	Theory	Practical	Viva	Grand Total
	400	300	100	800

Sr.	Name of the Textbook	Authors	Publisher
1.	Crofton & Douglas's Respiratory Diseases	Seaton A, Leitch A.G. Seaton D.	Blackwell Scientific
2.	Fishman's Pulmonary Diseases and Disorders	Fishman AP, Elias J.A, Fishman J.A, Grippi M.A, Kaiser L.R, Senior R.M.	McGraw Hill
3	Textbook of Pulmonary and Critical Care Medicine	JindalSK, Shankar P.S. D. Gupta, D. Raoof S, Aggarwal, AN	Jaypee Publishers
4.	Text Book on Tuberculosis	Rao K.N.	Kotari Book Depot, Bombay
5.	Chest Roentgenology	Felson B	W. B. Saunders Company U.S.A.& AITBS, India
6.	Pulmonary Medicine	Behera D.	Jaypee Brothers
7.	Principles of Chest x-ray Diagnosis	Simon G.	Butter worth &Jaypee Brothers
8.	Tuberculosis Case finding and Chemotherapy	Toman. K.	WHO, Geneva
9.	Clinical Tuberculosis	Davies P. D. O.	Chapman & Hall
10.	Clinical Tuberculosis	Crofton J, Horne N, Miller F.	W. B. Saunders
11.	Tuberculosis and Non- Tuberculosis Mycobacterial Infections	Schlossberg D.	McGraw Hill
12.	Nadel and Murray's Textbook of Respiratory Medicine	Mason R, Broaddus V, Murrary J, Nadel J.	Elsevier Saunders
13	Pleural Diseases	Light R.W.	Lippincott's, Williams & Wilkins
14	Principles of Critical Care Medicine	Udwadia F.E.	OxfordUniversity Press
15	Fundamentals of sleep	Richard Berry	Elsevier

VII. RECOMMENDED BOOKS (Latest editions):

16	High Resolution CT of the Lung	W Richard W ebb, N. Muller, DP Naidich	Walter klewer
17.	The Normal Lung	Murray J.F.	W. B. Saunders
18.	Textbook of Tuberculosis	S. K. Sharma	Jaypee Publishers
19.	Tuberculosis	Rom W.N, Garay S.M.	Little, Brown
20.	Davidson's Principles and Practice of Medicine	Boon N, Colledge N, Walker B, Hunter J.	Elsevier
21	Harrison's Principles of Internal Medicine	Kasper DL, Braunwald E, Fauci A.S, Hauser S.L, Longo D.L, Jameson J.L.	McGraw Hill

VIII. RECOMMENDED JOURNALS:

Sr. No.	Name of the Journal
1.	American Journal of Respiratory and Critical Care Medicine
2.	European Respiratory Journal
3.	Clinics in Chest Medicine
4.	Chest
5.	Respiratory Medicine
6.	Thorax
7.	Annals of American Thoracic Society
8.	Current Opinion in Pulmonary Medicine
9.	International Journal of Tuberculosis and Lung Disease
10.	Indian Journal of Chest Diseases and Allied Sciences
11.	Indian Journal of Tuberculosis
12.	Lung India
13.	Journal of Allergy and Clinical Immunology
14.	Respirology
15.	International Journal of COPD

ADDITIONAL READING (LATEST EDITIONS)

- 1. Indian Council of Medical Research, "Ethical Guidelines for Biomedical Research on Human Subjects", I.C.M.R, New Delhi.
- 2. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi.
- 3. Francis C M, Medical Ethics, J P Publications, Bangalore,
- 4. IndianNationalScienceAcademy, Guidelines for care and use of animals in Scientific Research, New Delhi.
- 5. International Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N Engl J Med.
- 6. Kirkwood B R, Essentials of Medical Statistics, Oxford: Blackwell Scientific Publications.
- 7. Mahajan B K, Methods in Bio-statistics for medical students, New Delhi, Jaypee Brothers Medical Publishers.
- 8. 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, NirmanBhawan, New Delhi.
- 9. National Health Policy, Min. of Health & Family Welfare, NirmanBhawan, New Delhi.
- 10. Srinivasa D K etal, Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry.

POST GRADUATE DEGREE COURSE M. S. IN GENERAL SURGERY

I. GOALS

The goals of postgraduate training course in Surgery would be to train a MBBS doctor who will:

- Practice surgery efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing surgical education irrespective of whether he is in a teaching institution or is a practicing surgeon.
- Be a motivated 'teacher' defined as a surgeon keen to share his knowledge and skills with a colleague or junior or any learner.

II. OBJECTIVES

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the subheadings.

- 1] Knowledge
- 2] Skills
- 3] Human values, Ethical practice and Communication abilities

1. Knowledge:

A list of objectives related to knowledge and higher cognitive abilities that are expected to be achieved during the course is given. At the end of training, the candidate must be able to:

- Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults, children and geriatric patients .
- Describe indications and methods for fluid and electrolyte replacement therapy including blood transfusion.

- Describe common malignancies in the country and their management including prevention.
- Demonstrate understanding of basic science relevant to general surgery
- Identify social, economic, environmental and emotional determinants in a given case, and take them into account for planning therapeutic measures.
- Recognize conditions that may be outside the area of his speciality / competence and to refer them to the proper specialist.
- Advise regarding the operative or non operative management of the case and to carry out this management effectively.
- Update himself by self study and by attending courses, workshops, conferences and seminars relevant to surgery.
- Teach and guide his team, colleagues and other students.
- 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.

2. Skills

- Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the surgical condition.
- Perform minor operative procedures and common general surgical operations independently and the major procedures with help from a senior surgeon.
- Provide basic and advanced life saving support services [BLS & ALS] in emergency situations.
- Manage acute abdominal emergencies and poly trauma.
- Undertake thorough wound management, including burn wounds.
- Undertake complete patient monitoring including the preoperative and post operative care of the patient.

3. Human Values, Ethical Practice and Communication Abilities:

- Adopt ethical principles in all aspects of his surgical practice. Professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- 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 patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS:

Essential Knowledge

The course contents have been identified and categorized as essential knowledge as under. This is to enable the students to achieve the objectives of the course. It is recognized that General Surgery today mainly covers abdominal operations, thyroid and breast diseases. A general surgeon should also have knowledge of some common problems in allied specialties. Further he should be familiar with complications, current controversies and recent advances in these topics.

The topics are considered under:

- Basic Sciences.
- General Surgery topics and
- Speciality topics.

Some overlap between the latter two categories is to be expected.

Basic Sciences: include anatomy, physiology, biochemistry, microbiology and pathology, as found in current text books. These standard topics are recommended to

be studied in as much as they are applicable to the practice of surgery. The stress is on applied anatomy of the parts dealt with by the surgeon as defined by the skills list, patho-physiology and surgical pathology.

General Surgery Topics include the following :

History of Surgery

Clinical History and examination- detailed systematic history taking. Clinical examination of various systems. Coming to a provisional working diagnosis.

Rationale of diagnostic tests- Ordering diagnostic tests with prioritizing the needs based on the clinical, hospital and the patient's socioeconomic condition.

Informed consent / **Medico legal issues**- Understanding the implications of acts of omission and commission in practice. Issues regarding Consumer Protection Act-Implications in a medico-legal case like accidents, assaults etc.

Communication skills with patients- Understanding clarity in communication, compassionate explanations and giving emotional support to at the time of suffering and bereavement.

Principles of surgical audit- Understanding the audit process and outcome; Methods adopted for the same. Basic statistics.

Principles of evidence based medicine- Understanding journal based literature study; the value of text book, reference book articles; value of review articles; original articles and their critical assessment. Understanding the value of retrospective, prospective, randomized controlled and blinded studies- understanding the principles and meanings of various biostatistical tests applied in these studies.

Medical ethics / Social responsibilities of surgeons

Use of computers in surgery- Components of a computer; its use in practice- principles of word processing, spread sheet functions, database and presentation; the internet and its uses. The value of computer based systems in bio- medical equipment.

Health insurance, health Care financing

Undertaking clinical audit

Prospective data collection / writing case reports and clinical papers

Giving presentations / Computer presentations

Preoperative workup- concept of fitness for surgery; basic medical workup; workup in special situations like, diabetes, renal failure, cardiac and respiratory illness; risk stratification;

Principles of operative surgery like asepsis, antisepsis, sterilization

Surgical sutures, drains, prosthetic grafts.

Postoperative care- concept of recovery room care; airway management assessment of wakefulness; management of cardiovascular instability in this period; criteria for shifting to a ward; pain management.

Basic surgical instrumentation- Principles of surgical instrumentation; their maintenance and sterilization.

Surgical diathermy, lasers, and other energy sources used in surgery

Wound management – wound healing; factors influencing healing; basic surgical techniques; properties of suture materials: appropriate use of sutures.

Assessment of head, chest and abdominal trauma and triage- Assessment of a trauma victim, resuscitation, care at the site; triage care in the accident department; Multiple injured patient, closed abdominal and chest injuries , penetrating injuries; fractures of pelvis; urological injuries; vascular injuries; trauma scores. criteria for immediate surgery; immediate workup and logical referral criteria.

Fluid and electrolyte balance / Acid – Base metabolism- The body fluid compartments; metabolism of water and electrolytes; factors maintaining homeostasis; causes for and treatment of acidosis and alkalosis.

Blood transfusion- Blood grouping, cross matching; blood component therapy; complications of blood transfusion; blood substitute; auto transfusions; cell savers.

Surgical infections- asepsis and antisepsis; microbiological principles; rational use of antibiotics; special infections like synergistic gangrene and diabetic foot infections. Hepatitis and AIDS

Surgical nutrition- nutritional assessment; metabolic response to stress; need for nutritional support; enteral nutrition; routes of access to GI tract; parenteral nutrition; access to central veins for nutritional support.

Principles of oncology- cell kinetics; causation of tumours; principles of oncologic surgery, radiotherapy and chemotherapy; paraneoplastic syndromes; cancer pain management; palliative care

Principles of burn management – type of thermal injury; assessment of extent; immediate management; late management; skin cover; rehabilitation.

Principles of fracture management- fracture healing; principles of immobilization; complications; principles of internal fixation.

Airway obstruction/ **management-** anatomy of the airway; principles of keeping the airway patent; mouth to mouth resuscitation; oropharyngeal airway; endotracheal intubation; crico- thyroidotomy; tracheostomy.

Critical care- Cardio respiratory failure, resuscitation; types, diagnosis & management of shock; including monitoring; pharmacological support; sepsis scores; ARDS and its causes, prevention, ventilatory support.

Anaesthesia- pharmacology of inhalational, intravenous and regional anaesthetics; muscle relaxants.

Acute abdomen- Appendicitis / Peritonitis / Perforated viscus / Intestinal obstruction.

Hernias- Various types of hernias, simple and complicated, their repair, prosthetic materials.

Pain control- acute and chronic pain; cancer and non cancer pain; patient controlled analgesia.

Breast disease- benign and malignant disease; diagnosis; investigation; screening for cancer; genetics of breast cancer.

Thyroid diseases- Types of goiter, etiology, pathology, diagnosis investigations and management of goiters.

GI diseases-Salivary glands, oesophageal, gastro-duodenal and small bowel disorders.

Hepato-biliary and pancreatic diseases

Colo-rectal & Anal diseases.

Soft –tissue neoplasms.

Endocrine diseases.

The speciality topics include the following:

GI endoscopy and Laparoscopy :

Principles of GI endoscopy, instrumentation

Diagnostic and therapeutic GI endoscopy including upper GI, lower GI and pancreato-biliary systems. Complications including infective considerations Instrumentation of laparoscopy, Physiology of pneumoperitoneum Pinciples of laparoscopy, Diagnostic Laparoscopy Laparoscopic therapeutic procedures, complications Role of bariatrics in General Surgery Basics principles of Bariatric Surgery Complications of bariatric surgery Role of general surgery in metabolic disorders Use of robotics in general surgery and basics of robot assisted surgery Neurosurgery.

•

Head and neck trauma; acute management and rehabilitation Concept of brain death / medico- legal implications Peripheral nerve injuries Neoplasms of the brain and meninges Acute and chronic infections of the brain and meninges **Hydrocephalus** Spinal injuries Monitoring intracranial tension

• Urology

Urological injuries Urothelial tumours, Chemotherapy Prostatic hypertophy, and cancer **Hypospadias**

Pyleonephritis , perinephric abscess GU tuberculosis, Urolithiasis Scrotal and penile diseases Endourology Peritoneal dialysis ,CAPD, Haemodialysis Transplantation , harvesting kidney Urinary diversion Infertility , Vasectomy

• Oncology

Imaging CT/ MRI/ CT Guided FNAB/C Breast, thyroid and GI malignancies Head and neck tumours, Soft tissue tumors Chemotherapy, Radiotherapy

• Plastic Surgery.

Burns management Facial injuries Principles of tissue transfer Cleft lip and palate Congenital defects of hand Pressure sores Principles of microsurgery Hypospadias Details of skin flaps Nerve repair Vascular repair Hand injuries , tendon injury
• Cardio-thoracic surgery

Thoracic injuries, Flail chest

Bronchogenic carcinoma.

Endocarditis prophylaxis

Pulmonary function tests

Control of major hemorrhage.

Operations on the diaphragm.

Coronary artery disease.

Valvular heart disease.

Lobectomies and pneumonectomies

Oesophageal disease. Operations of thoracic aorta

Mediastinal tumours.

Basics of congenital heart disease.

• Vascular Surgery.

Vascular imaging AV malformations Exposure of major arteries and veins , vascular anastamosis & repair Varicose veins Chronic venous insufficiency Vascular emergencies – trauma, embolism Peripheral vascular disease- Atherosclerosis. Arteritis Details of vascular prosthesis.

• Paediatric Surgery

Fluid and electrolyte management Preparation for surgery / postop care Hernias, intestinal obstruction Spinal fusion defects. Ventral defects Undescended testes. Hypertrophic pyloric stenosis Hirshprung's disease. Diaphragmatic hernia. Atresia of oesophgus ,Tracheo oesophageal fistula Anorectal anomalies Necrotising enteritis Paediatric tumors **Gynaecological Surgery.** Pelvic inflammatory disease.

Ectopic pregnancy

Ovarian Cysts.

Caesarean Section

Family planning.

Essential Surgical Skills.

Surgery is a skill- based discipline. The following list is drawn up with a view to specifying basic minimum skills to be acquired. While an attempt has been made to specify the year wise distribution of the learning of skills [in the latter part of this curriculum], it is recognized that the process is a continuous one. The principles of giving graded responsibility to the students is to be applied throughout the course. The year wise distribution of the skills recommended are to be used as general guideline. Some overlap may be there. Provision of training in various specialty subjects had been made during the second year of the course. Skills in specialty subjects may be acquired both during the speciality postings and during the general surgical postings in the parent department, if the procedures are carried out. The list within the tables, indicates the surgical procedures that the students should by the end of the course and be able to perform independently [PI] by himself / herself or should have performed with assistance [PA] during the course. The other categories of surgical procedures mentioned form a general guide for the procedures that the students should either have observed [O] or have assisted the operating surgeon [A]. Note, for all categories,

the students washes up in the operating room. There may be an overlap in the skill list between the general surgery list and the speciality list. Where different numbers are mentioned for the same/ similar procedures between the general surgery and speciality list., the higher number is applicable as the prescribed number [Note that the total number is not the sum of the numbers mentioned for the same / similar procedures in the general surgery and speciality lists]

Skills may be considered under the following headings.

- a. Basic graduate skills.
- b. Ward procedures
- c. ICU procedures
- d. Emergency room procedures
- e. Preoperative workup procedures
- f. Postoperative procedures
- g. Minor surgical procedures
- h. Major operating room techniques
- i. General Surgical procedures
- j. Speciality surgical procedures

a.] Basic graduate skills.

The students should have acquired the certain skills during his under-graduation and internship. These skills have to be reinforced at the beginning of the training periods. These skills include:

Procedure	Category	Year	Number
Insertion of I.V. lines. nasogastric tube, urinary catheters, etc.	PI	I	50
Minor suturing and removal of sutures	PI	I	50
Removal of tubes and drains	PI	I	50
Routine wound dressings	PI	I	50

b] Ward Procedure.

Ward work forms an important part of the training of the surgeon. In addition to the routine examination of the patient with proper recording of findings. Diligent practice of the following is recommended.

Procedure	Category	Year	Number
Abdominal Paracentesis including Diagnostic Peritoneal Lavage	PI	I	5
Ability to teach UG's and Interns	PI	1	NA
Blood sampling- venous and arterial	PI	I	NA
Bone Marrow Aspiration	PI	I	2
Burns dressing	PI	11	10
Communication skills with patients, relatives colleagues and paramedical staff	PI	I	NA
Ordering of the requisite laboratory and Radiological investigations and Interpretation of the reports in the light of the clinical picture	PI	I	NA
Proficiency in common ward procedures	PA	I	NA
Skills for Digital-rectal examination and Proctoscopy	PI	I	NA
Thoracocentesis	PI	II	5
Universal precautions against communicable diseases	PI		NA
Venesection.	PI	+ +	5

NA: Not Applicable.

c] ICU Procedure.

Procedure	Category	Year	Number
Insertion of Arterial lines	PI		10
Insertion of Central venous lines	PI	I	10
Insertion of endotracheal tubes	PI	II	10
Insertion of Peritoneal Dialysis Catheters	A/PA	1, 11, 111	5
Intercostal Drainage	PI	II	5
Suprapubic Puncture / Trocar Cystostomy	PI	II	5
Tracheostomy	PI	I	2
Working knowledge of ventilators and various Monitors	PI	I	NA
Interpretation of Arterial blood gases	PI	I	NA
Correction of Electrolyte disturbances	PI	I	NA
Prescribing Parenteral & Enteral nutrition	PI	I	NA

d] Emergency Room Procedure.

Procedure	Category	Year	Number
Application of Splints for Fractures	PI	I	NA
Arterial and Venous Lines	PI	Ι	NA
Assessment and initial management of polytrauma	PI	Ι	NA
Cardiopulmonary Resuscitation	PI	I	NA
Management of Airway obstruction	PI	I	NA
Management of shock and Cardiao Respiratory failure	PI	I	NA
Recognition and Initial management of Surgical Emergencies	PI	Ι	NA
Suturing Techniques	PI	Ι	NA

e] Pre-operative workup

Procedure	Category	Year	Number
Ability for adequate pre-operative preparation in special situations like Diabetes, renal failure cardiac and Respiratory failure etc. and risk Stratification	PI	I	NA
Communication skills with special reference to obtaining informed Consent	PI	I	NA
Proper pre-operative assessment and preparation of patients including DVT prophylaxis, Blood transfusion and Antibiotics	PI	I	NA

f] Post-operative Care

Procedure	Category	Year	Number
Airway management	PI	1,11,111	NA
Basic Physiotherapy	PI	I	NA
Management of epidural analgesia	PI	I	NA
Management of Fistulae	PI	I	NA
Management of postoperative hypo and hypertension	PI	I	NA
Postoperative pain control	PI	I	NA
Skills for Nutritional rehabilitation of patients.	PI	I	NA
Skills for proper Fluid,electrolyte,acid base & Antibiotic management	PI	Ι	NA
Stoma care	PI	I	NA

g]	Minor	O.T.	Procedure.
51	Minor	0.1.	i i occuui ci

Procedure	Category	Year	Number
Circumcision under Local Anesthesia	PI	I	5
Drainage of Abscesses	PI	I	5
FNAC	PI	I	5
Major dressings	PI	I	20
Minor Anorectal Procedures [Haemorrhoids- Banding. Cryotherapy. Suturing, Anal dilatation and Fissures] Fistulectomy etc.			
	PI	Ш	10
Minor Biopsies – Lymph node, ulcer, swellings etc.	PI	I	20
Reduction and plaster application of simple fractures dislocations	PA	II	10
Removal of simple subcutaneous swellings	PI	I	10
Sigmoidoscopy and Upper G.I endoscopy [preferable in and endoscopy room]	PA/A/O	II	10
Suturing Techniques	PI	I	20
Vasectomy	PI/PA		5
Wound debridement	PI		10

h] Major Operating rooms techniques

Procedure	Category	Year	Number
Instrument arrangement and trolley layout	PA	I	NA
Skills in Sterilization techniques. O.T. Layout and Asepsis	0	I	NA
Skin preparation- painting and draping	PI	l	NA
Techniques of scrubbing and gowning	PI	I	NA

i1	General	Surgical (Operative	Procedures.
'J	General	Juigicui	sperunte	i i occuui esi

Procedure	Category	Year	Number
Appendicectomy	PI	I	10
Cholecystectomy	PI and PA		1 and 3
Closure of Colostomy	PA		2
Closure of peptic ulcer perforation, under-running bleeding ulcer , vagotomy & drainage	PI	111	3
Colostomy	РА	- 111	2
Cysts and sinuses of the neck	РА	- 111	2
Diagnostic laparoscopy	PA		3
Drainage of breast abscess / Excision of breast lump	PI	I	10
Groin Hernia repair	PI	11 /111	5
Gynaecomastia	PA		2
Haemorrhoidectomy , Fissurectomy , Simple fistulectomy	See Min	or OT Pr	ocedure
Hemicolectomy	PA		1
Herniotomy, Orchidopexy in children	РА	- 111	3
Laparotomy for abdominal trauma , splenectomy	PI		3
Laparotomy for intestinal obstruction , bowel resections , bowel anastamosis	PI		3
Management of complex wounds	PI	I	10
Mastectomy	PA/A	- 111	2
Opening and closing the abdomen	PI	I	5
Opening and closing the chest	PI	111/111	1
Parotidectomy	A		2

Release of bands and simple adhesive obstruction	PI	II	5
Thyroid lobectomy	PA		3
UGI endoscopy , Flexibe sigmoidosocpy	A/O	11/111	10
Ventilation	PI	II	5
Wide excision of breast tumours , microdochectomy	PA	==	3

j] Speciality Procedures

There may be repetition of some of the procedure listed under this category and those listed under General Surgery procedures. Where different numbers are mentioned for the same / similar procedures between the general surgery and speciality lists, the higher number is applicable as the prescribed number.{Note that the total numbers is not the sum of the numbers mentioned for the same/ similar procedures in the general surgery and speciality lists]

Laparoscopy and GI Endoscopy

Procedure	Category	Year	Number
Diagnostic and therapeutic Upper and lower GI endoscopy	PA		10
Diagnostic laparoscopy	PA		3
Diagnostic Upper GI endoscopy	PA		10
Laparoscopic Cholecystectomy	A		3

Neurosurgery

Procedure	Category	Year	Number
Craniotomy	А	II	2
Management of paraplegia	А	II	2
Peripheral nerve repair	A	II	2
Prevention of nerve injury- specific operation	A	II	2
Suturing complex scalp wounds	PI	II	2
Trephining	PA	II	2

Urology

Procedure	Category	Year	Number
Catheterization	PI		NA
Circumcision	PI	I	10
Diagnostic cystoscopy	PA/A	II	3
Inguinal Block dissection	PA	Ш	1
Meatotomy	PI	Ш	3
Nephrectomy - partial total	A	II	3
Nephrolithotomy	A	II	3
Orchidectomy	PA/A	II	3
Orchidopexy	A	II	3
Retroperitoneal lymph node dissection	0	11/111	1
Supra pubic cystostomy	PI	II	3
Total, partial amputation of penis	A	II	1
TUR / Open prostatectomy	A	II	5
Ureterolithotomy	A	II	3
Urethral / Urogenital injuries	A	II	3

Urethral dilatation	PI	II	5
Varicocele	PA/ A	II	3
Vasectomy	PI	1 / 11/ 111	10

Oncology

Procedure	Category	Year	Number
All radical operations – Breast, Thyroid, GI and Facio- Maxillary malignancies	A	11	2 EACH
Breast lumpectomy	PI	I	3
Functional neck node dissection	A	II	3
Gastrectomy/ Bowel resection	A	II	3
Imprint cytology	PA	II	3
Metastatic workup	PA	II	5
Stoma care	PA	II	5
Thyroid surgery	A	II	5
USG guided biopsy	A/ O	II	3

Plastic Surgery

Procedure	Category	Year	Number
Burn resuscitation	PI	I	5
Lip surgery	А	II	5
Local blocks in anaesthesia	PI	I	10
Minor hand injuries	PI	II	2
Nerve repair	А	II	2
Post excision reconstruction	A	II	2
Reimplantation of digits	0	II	1

Skin flap surgery	0	II	2
Split skin graft	PI	II	3
Stitch craft	PI	I	NA
Tendon repair	PA	II	2
Wound debridement	PI	I	10

Paediatric Surgery

Procedure	Category	Year	Number
Anorectal anomalies	A	II	2
Circumcision / meatoplasty	PA	II	10
Herniotomy	PA	11 / 111	2
Intercostal aspiration	PI	II	2
Laparotomy for peritonitis, & intestinal obstruction	PA	II	5
Lymph node biopsy	PI	11/ 111	5
Non operative treatment of volvulus	A/ O	II	2
Orchidopexy	PA/ A	II	5
Ostomies	PA	II	2
Paediatric emergencies	A/ PA	II	10
Pyloromyotomy	PA/A	/	5

Cardiothoracic Surgery

Procedure	Category	Year	Number
Canulation of artery and vein	А	II	2
Chest injuries	PA	11 / 111	5
Empyema drainage / decortication	PI	II	2
Endotracheal intubation	PI	I	10

Intercostal drainage	PI	I	5
ITU duties	PI	11 / 111	NA
Lobectomies and pneumonectomies	0	11	2
Oesophageal surgery	0	11 / 111	2
Opening and closing the chest	PA	II	2
Pericardiectomy	0	II	2
Removal of FBs	A	11/ 111	2
Removal of pulse generator (pacing)	PA/ A	II	1
Rib resection	PA	11 / 111	2
Tracheostomy	PI		5
Undertake sternotomies	PA	1i/ 11	2
Vein and arterial harvesting	PA/ A	11 / 111	2
Ventilator management	PA	I	10

Vascular Surgery

Procedure	Category	Year	Number
AV shunt for vascular access	РА	11 / 111	2
Bypass graft- prosthetic	A	11 / 111	2
Conservative amputations	PI	11 / 111	5
Embolectomy	PA	11 / 111	2
Post- traumatic aneurysms	A	11 / 111	2
Sympathectomy	A	11 / 111	2
Use of heparin	PI	11 / 111	10
Varicose vein surgery	PI	11 / 111	2
Vascular suturing	PA	11 / 111	2
Vein graft	A/ O	11 / 111	2
Vein patch repair	A/ O	11 / 111	2

IV. TEACHING AND 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 teachings 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 post graduate students of all specialities. Few topics are suggested as examples:
 - 1] Bio-statistics
 - 2] Use of library,
 - 3] Research Methods
 - 4] Medical code of conduct and Medical Ethics
 - 5] National Health and Disease Control Programmes
 - 6] Communication Skills etc.

These topics may preferably be 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,

eg. Jaundice, Diabetes mellitus, Thyroid etc.

2. **Journal club:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. Further, every candidate must make a presentation from

the allotted journal [s] selected articles at least four times a year and a total of 12 Journal article presentations in three years. The presentations would be evaluated using check lists and would carry weight age for internal assessment [See checklist in chapter IV] A time table with names of the student and the moderator should be announced at the beginning of every term.

3. **Subject Seminar:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. Further, every candidate must present on selected topics at least four times a year and a total of 12 seminar presentations in three years. The presentations would be evaluated using check lists and would carry weight age for internal assessment [See checklist in chapter IV] A timetable for the subject with names of the students and the moderator should be scheduled at the beginning of every term.

Students Symposium: Recommended as an optional multi disciplinary programme. The evaluation may be similar to that described for subject seminar.

- 4. **Case discussions:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in the discussion and enter in the Log book relevant details. The presentations would be evaluated using check list and would carry weight-age for internal assessment. A time table for the case presentation with names of the students should be announced in advance.
- 5. Ward Rounds: Ward rounds may be service or teaching rounds.
 - Service Rounds: Post-graduate students and Interns should do every day for the care of the Patients. Newly admitted patients should be worked up by the PG's and presented to the seniors the following day.
 - Teaching Rounds: Every unit should have grand rounds' for teaching purpose. A diary should be maintained for day to day activities by the students.

Entries of [A] and [B] should be made in the Log book.

6. Clinico – Pathological Conference: Recommended once a month for all post graduate students. Presentation be done by rotation.Presentation will be assessed using check list. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPCs

7. Inter Departmental Meetings: Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a week. These meetings should be attended by post graduate students and relevant entries must be made in the Log Book.

Pathology: A dozen interesting cases may be chosen and presented by the post graduate students and discussed by them as well as the senior staff of Surgery department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advance immuno-histo-chemical techniques, burgeoning markers, other recent developments can be discussed.

Radio-diagnosis: Interesting cases and the imaging modalities should be discussed. Emphasis should be given for the radiological differential diagnosis.

- 8. **Mortality meeting:** The mortality meeting should be conducted in the department every month. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records will be discussed in detail during this meeting.
- 9. **Teaching Skills.** Post graduate students must teach under graduate students [Eg. Medical and nursing students] by taking demonstrations, bed side clinic, tutorials, lectures etc. Assessment is made using a checklist by surgery faculty as well as by the students.[See model checklist] Record of their participation be kept in Log book. Training of post-graduate students in Educational Science and Technology is recommended.
- 10. **Continuing Medical Education Programs [CME]** Recommended that at least 1 state level CME programs should be attended by each student in 3 years.
- 11. **Conferences:** Attending conference is compulsory. Post graduate student should attend one national and one state level conference during the course.
- 12. **Research activities:** The post graduate students to be encouraged to carry out research activities in the department other than dissertation work.

B. Clinical / Practical Training

1. Rotation postings in other departments.

The listed knowledge and skills are to be learnt over a period of 3 years. The process is a continuous one. However the recommended period and timing of training in basic subjects, allied departments and specialty departments is given below.

In the first year, during the morning session, students should work in the parent department. It is recommended that 2 years and 4 months are spent in General Surgery and 8 months in allied and specialty departments. Depending on the time and opportunities available, some of the procedure listed for second year activity can be shifted either to the first or the third year. Students must be on call on a regular basis. The total duration of postings in core and other specialties will be eight months.

Basic Science

Basic science should be an essential part of training. It should be done as concurrent studies during the 1st year of training. At least two hours daily may be in the first six months of the course. In the first year, during the morning session, time is spent in the parent department. In the afternoons basic science teaching relevant to surgery can be done in the respective department.

Topics for study to include Anatomy. Physiology. Pathology. Microbiology, Pharmacology. Anesthesia and Radiology.

Pathology- Concurrent study- recommend daily Grossing sessions. Weekly Surgical pathology session and monthly CPCs

Radiology- Concurrent study-adequate exposure to modern imaging modalities like USG, CT, MRI and angiography.

Allied Specialty Training.

Students are posted to core allied speciality subjects Viz. Anesthesia and ICU for one month and Orthopedics including trauma [Accident and emergency] for 2 months during the second year of training. Posting to the Department of Obstetrics and Gynecology for one month is optional. This posting may be in lieu of one of the other specialities [except the core specialities] depending on the choice of the candidate.

Other Surgical Specialty Subjects.

Postings to other speciality departments will be during the second year. The department and duration of postings are as under

Department	Duration.
Paediatric Surgery	4 weeks.
Plastic surgery	4 weeks.
Cardiothoracic surgery	4 weeks.
Vascular surgery	4 weeks.
Neurosurgery	4 weeks.
Urology	4 weeks
Oncology	4 weeks.

V. OTHER CRITERIA TO BE FUFILLED FOR THE DEGREE COURSE:

1. Internal evaluation:

During the course of three years, the department will conduct three tests. Two of them will be annual, one at the end of first year and other at the end of second year. The third test will be a preliminary examination which may be held three months before the final examination. The test may include the written papers, practicals/clinicals and viva-voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the university when called for.

Results of all evaluations should be entered in to PG's diary and departmental file for documentation purposes. Main purpose of periodic examination and assessment is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/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. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures performed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinizes and certified by the Head of the Department and Head of the Institution, and presented in the university practical / clinical examination.

3. Dissertation:

Every candidate pursuing M.S. degree course is required to carry out work on a selected reseach 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. For details regarding DISSERTATION Refer 9.1 to 9.10 of Chapter-I.

VI. SCHEME OF EXAMINATION:

Candidate will be allowed to appear for examination only if attendance (minimum80%) and internal assessment are satisfactory and dissertation is accepted.

A. Theory: 400 marks

There shall be four question papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Question	No of Questions	Marks for each Question	Total Marks
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

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

Paper I Basic Sciences.

- 1. Anatomy
- 2. Physiology
- 3. Other basic science topics covered in syllabus.

Introduction to Surgery, Basic Surgical Principles, Wounds. Tissue repair and scars. Critical care: fluid. Electrolyte and acid- base balance: blood transfusion. Nutritional support and rehabilitation. Anesthesia and pain relief. Wound infection. Special infections. Acquired immunodeficiency Syndrome [AIDS] Sterile precautions. Transplantation. Tumours. Cysts. Ulcers, Sinuses. Plastic and reconstructive surgery. Skin lesions. Burns. Arterial disorders. Venous disorders. Lymphatic system. Day surgery. Audit in surgery. Surgical ethics.

Paper II

Eye and orbit. Cleft lip and palate. Developmental abnormalities of the face. Palate, jaws and teeth. Maxillofacial injuries. Nose and sinuses. Ear. Oral and oropharyngeal cancer and precancer. Salivary gland disorders. Pharynx. Larynx and neck. Thyroid gland and the thyroglossal tract. Parathyroid and Adrenal glands. Breast, Thorax, Heart and Pericardium.

Paper III

Anastomoses, Oesophagus, Stomach and duodenum liver. Spleen. Gallbladder and bile ducts. Pancreas. Peritoneum. Omentum, mesentery and retroperitoneal space. Small and large intestines. Intestinal obstruction. Vermiform appendix. Rectum. Anus and anal canal. Hernias, Umbilicus, Abdominal wall. Principles of Laparoscopic surgery.

Paper IV

Orthopedics: musculoskeletal disorders. Fracture and Dislocations- General specific Diseases of bones and joints- infection, tumours, generalized diseases and chronic joint diseases, congenital disorders. Wrist and hand Foot.

Nervous system: Neurological disorders affecting the musculoskeletal system. Spine vertebral column and spinal cord. Nerves. Cranium [Scalp. Skull, brain] Genito-Urinary System: Urinary symptoms. Investigation of the urinary tract, anuria Kidneys and ureters. Urinary bladder. Prostate and seminal vesicles. Urethra and penis. Testis and scrotum.

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

B. Clinical/ Practical Examination: 200 Marks

To elicit competence in clinical skills and to discuss differential diagnosis and therapeutic aspects.

Type of Cases	No of Cases	Marks
Long Case	1	100
Short Cases	2(50 marks each)	100
Spotters	5x10	50
Ward Rounds	2x25	50
Total		300

C. Viva -Voce Examination: 100 Marks

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills

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 given case reports. charts, gross specimens. histo pathology slides. X ray, ultrasound. CT scan images, etc. for interpretation. Questions on operative surgery will be asked. Students knowledge on the use of instruments and drugs pertaining to the subject will also be evaluated during viva – voce examination.

- 2) Pedgogy Exercise and Log Book [20 marks]

	Practical's						١	/iva-Vo	ce								
Long	Short	Short	Ward	Ward	Spotter	Spotter	Spotter	Spotter	Spotter	Total	Instru	Specim	X-ray	Pedag	Operat	Total	Grand
Case	Case	Case	Rounds	Rounds	1	Ш	Ш	IV	V		ment	en		ogy	ive		Total
	.														Surger		
	'														У		
100	50	50	25	25	10	10	10	10	10	300	20	20	20	20	20	100	400

M.S. General Surgery Practical/Clinical Examination

D. Maximum Marks:

Maximum marks for	Theory	Practical	Viva	Grand total
M.S.in General Surgery	400	300	100	800

SI.No	Name of the Text Book	Authors/Editors	Publisher
1	Bailey & Love's Short Practice of Surgery,	Russell R.C.G, Williams. N.S.	Arnold Heinemann
2	A Manual on Clinical Surgery	Das K	S Das
3	Hamilton Baileys Demonstrations of Physical Signs in Clinical Surgery	John SP Lumley	Butterworth Heinemann
4	ASI Text book of Surgery	Hai A.A.	Tata Mcgraw Hill publishing company
5	Farquharson's Textbook of Operative General Surgery	Farquharsons	Hodder Arnold
6	A Practical Guide to Operative Surgery	Das. S	Churchill Livingstone.
7	Jamieson and Kay's T.B. Of Surgical Physiology	Ledingham.I.M; Mackey.C	Churchill Livingstone.
8	Pye's Surgical Handicraft	Kyle.J; Smith.J.A.R	K.M.Varghese
9	Textbook of Surgery vol 1&2	Sabiston.D.C	Prism Books. Pvt.Ltd
10	Schwartz Principles of Surgery	Brunicardi.F.C; Andersen.D.K.	Mcgraw-Hill
11	Last's Anatomy. Regional And Applied	Sinnatamby.C.S	Churchill Livingstone.
12	A Textbook Of Surgical Pathology	Illingworth.S.C. ; Dick.B.M	ELBS.
13	Hand Book of Surgical Instruments for under Graduates	Pankaj Patel, V.V.Dewoodkar	Bhalani

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

Reference Text Books

1	Review Of Medical Physiology	Ganong.W.F	Mcgraw Hill Book Com Inc
2	Textbook of Medical Physiology	Guyton, & Hall	W.B.Saunders
3	Mcgregor.A.L A Synopsis to Surgical Anatomy	G.A.G. Decker	Varghese Publishing House.

4	Oxford Textbook Of Surgery. Vol. 1,2 & 3	Morris.P.J. Wood.W.C,	Oxford University Press
5	The New Aird's Companion In Surgical Studies	Burnand.K.G. Young.A.E	Churchill Livingstone
6	Maingots Abdominal Operations Vol. I & II	Zinner.M.J	Appleton & Lange
7	Mastery Of Surgery. Vol. 1 & 2	Baker.R.J; Fischer.J.E.	Lippincott Williams & Wilkins
8	Hamilton Bailey's Emergency Surgery	Ellis.B.W.	Arnold-Heinemann.
9	Essentials of Surgical Practice,	Cashiery,	K.M.Varghese
10	Surgery of The Anus Rectum and Colon	Goligher.J	Bailliere Tindall
11	Year Book Of Surgery. [Series]	Schwartz.S.I.	Mosby-Year-Book.
12	Rob And Smith's Operative Surgery (All Volumes)	Jamieson.G.G. Yao.J.S.T.	Chapman And Hall.
13	Textbook Of Surgical Laparoscopy	Palanivelu.C	
14	Recent Advances In Surgery.[Series]	Gupta.R.L.	Jaypee Brothers
15	Recent Advances In Surgery. [Series]	Johnson.C.D. Taylor.I.	Royal Society Of Chemistry.
16	Modern Trends in Surgery-[Series]	Irvine.W.I.	Butterworth & Co.

Reference Books

1	Pediatric Surgery. Vol. I & II	Welch.K.J.; Randolph.J.G.	Year Book Medical Publisher.
2	Harrison's Principles Of Internal Medicine. Vol. I & II	Kasper.D.L.; Braunwald.E.	Mcgraw Hill Book Com Inc.
3	Diseases of The Liver and Biliary System	Sherlock.S. ; Dooley.J.	Blackwell Science.
4	Cancer Principles and Practice of Oncology.Vol.1 & II,	Devita.V.T; Hellman.S.	J.B.Lippincott Co.

5	General Urology	Smith.D.R.	Lange Medical Publications.
6	Surgery of The Liver and Biliary Tract.	Blumgart.L.H.; Fong.Y. Vol. I & II	W.B. Saunders
7	Campbells Urology. Vol. I to IV	Walsh.P.C.; Retik.A.B,	W.B. Saunders Company.

VIII. RECOMMENDED JOURNALS:

SI. No	Name of the journal
1	Indian Journal of Surgery
2	British Journal of Surgery.
3	American Journal of Surgery.
4	Surgery International
5	New England Journal of Medicine
6	Surgery, Gynecology & Obstetrics
7	Year Book of Surgery
8	Surgical Clinics of North America
9	Lancet
10	British Medical journal
11	Urological Clinics of North America
12	Indian Journal of Medical Research
13	World Journal of Surgery
14	Indian Journal of Cancer

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. Nirman Bhawan, New Delhi. P 335.

- 2. National Health Policy Min of Health & Family Welfare. Niman Bhawan New Delhi. 1983.
- 3. Santosh Kumar: The Elements of Research. Writing and editing 1994 Dept of Urology, JIMPER, Pondicherry,
- 4. Srinivasa D.K. etal. Medical Education Principles and Practice, 1995 National Teacher Training Centre, JIPMER. Pondichery.
- 5. Indian Council of Medical Research: Policy Statement of Ethical considerations involved in Research on Human Subjects, 1982; I.C.M.R. New Delhi.
- 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. 1993
- 8. International 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 Engl J Med, 1991, 434-8
- 10. Kirkwood B.R. Essentials of medical Statistics, Latest Edn Oxford. Blackwell Scientific Publications, 1998.
- 11. Mahajan B.K. Methods in Bio-statistics for Medical Students Latest Edn New Delhi. Jaypee Brothers Medical Publishers, 1989
- 12. Raveendran B Gitanjali. A Practical approach to PG dissertation, New Delhi. Jaypee Publications, 1998
- 13. R.K. Chaube: Consumer Protection Act and Medical Profession. Latest Edition , Jaypee Brothers.

POST GRADUATE COURSE M.S IN OBSTETRICS AND GYNAECOLOGY

I. GOALS:

The goal of the post graduate degree course in Obstetrics and Gynaecology shall be to train the student to acquire competencies pertaining to Obstetrics and Gynaecology that are required to practice at all levels of health system in the community and globally.

II. OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the sub headings.

- 1. Knowledge.
- 2. Skills.
- 3. Human values, ethical practice and communication abilities.

1. Knowledge:

- Shall have knowledge of the basic and advanced principles of Obstetrics and Gynaecology.
- Shall be aware of the contemporary advances and developments in medical sciences as related to Obstetrics and Gynaecology.
- Have knowledge of the basic principles of anesthesiology and resuscitation measures.
- Shall be oriented to principles of research methodology.

2. Skills

- Shall provide quality care to the women in the diagnosis and management of antenatal, intranatal& postnatal period of normal and abnormal pregnancy.
- Shall provide effective & adequate obstetrical care including emergencies and immediate management of the newborn.
- Shall manage common gynaecological problems & emergencies.

- Shall develop adequate surgical skills to manage common obstetrical &gynaecological problems.
- Shall provide counseling and delivery of fertility regulation methods and perform medical termination of pregnancy.
- Shall develop adequate skills to perform and interpret basic obstetrical and gynaecological ultrasonography.
- Shall organize and implement the "National Health Programs" pertaining to women's health.
- Shall acquire skills in educating medical and paramedical professionals including the society.
- Shall keep abreast with advances in the field of Obstetrics & Gynaecology.
- Plan and carry out scientific research (clinical / experimental) in the speciality of Obstetrics &Gynaecology.

3. Human values, Ethical practice and Communication abilities

- Adopt ethical principles in all aspects of his/her practice; professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his team in a congenial working atmosphere.
- Apply high moral and ethical standard 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 patient's right to information and right to seek a second opinion.
- Properly maintain medical records and know the medico legal aspects and acts pertaining to obstetrical &gynaecological practice.
- Be familiar with modern methods of teaching, develop communication skills and demonstrate compassionate attitude towards the patients.

III. COURSE CONTENTS:

1) Theory

i. Basic Sciences and medical genetics

- Normal & abnormal development, structure and function of urogenital system and female breast.
- Applied anatomy of genito-urinary system, abdomen, pelvis, pelvic floor, anterior abdominal wall and upper thigh (inguinal ligament, inguinal canal, vulva, rectum and anal canal).
- Physiology of spermatogenesis.
- Endocrinology related to male and female reproduction.
- Anatomy & physiology of urinary & lower GI Tract (rectum & anal canal), development, structure & function of placenta, umbilical cord & amniotic fluid.
- Anatomical & physiological changes in female genital tract during pregnancy.
- Anatomy of fetus, fetal growth & development, fetal physiology & fetal cir-culation.
- Physiological & neuro-endocrinal changes during puberty, adolescence, men-struation, ovulation, fertilization, climacteric & menopause.
- Biochemical and endocrine changes during pregnancy, including systemic changes in cardiovascular, hematological, renal, hepatic and other systems.
- Biophysical and biochemical changes in uterus and cervix during pregnancy &labour.
- Pharmacology of drugs used during pregnancy, labour& postpartum period, with reference to their absorption, distribution, excretion, hepatic metabolism, transfer of the drugs across the placenta, effect of the drugs used in labour, on fetus & their excretion through breast milk.
- Mechanism of action, metabolism & excretion of drugs used in the management of gynaecological disorder.
- Role of hormones in Obstetrics & Gynaecology.

- Markers in Obstetrics & Gynaecology –nonneoplastic and neoplastic diseases.
- Pathophysiology of ovaries, fallopian tubes, uterus, cervix, vagina and ex-ternal genitalia in healthy and diseased conditions.
- Normal and abnormal placenta, umbilical cord, amniotic fluid and fetus.
- Normal and abnormal microbiology of genital tract. Bacterial, viral & para-sitical infections responsible for maternal, fetal and gynaecological disor-ders.
- Humoral and cellular immunology in Obstetrics & Gynaecology.
- Gametogenesis, fertilization, implantation & early development of embryo.
- Normal pregnancy, physiological changes during pregnancy, labour& puerperium.
- Immunology of pregnancy.
- Lactation physiology & pathology.

Basic medical genetics including cytogenetics.

- Pattern of inheritance
- Chromosomal abnormalities types, incidence, diagnosis, management and recurrence risk. -
- General principles of teratology.
- Screening, counseling and prevention of developmental abnormalities.
- Birth defects genetics, teratology & counseling.

ii. Clinical Obstetrics

- Prenatal care of normal pregnancy including examination, nutrition, im-munization & follow up.
- Identification and management of complicated & high risk preg-nancies

 abortion, ectopic pregnancy, gestational trophoblastic diseases, hyperemesis gravidarum, multiple pregnancy, antepartum hem-orrhage, pregnancy induced hypertension (pre-eclampsia, eclampsia, other associated hypertensive disorders), anemia, Rh-incompatibility, diabetes,

heart disease, renal & hepatic diseases, preterm labour, premature rupture of membranes, post term pregnancy, recurrent pregnancy loss & intrauterine fetal growth restriction.

- Neurological, hematological, dermatological diseases, immunological dis-orders and other medical & surgical disorders associated with pregnancy including acute abdomen (surgical emergencies appendicitis & GI emergencies), hydramnios&oligamnios.
- Diagnosis of contracted pelvis / CPD and its management.
- Evaluation of fetal & maternal health in complicated pregnancies by making use of diagnostic modalities including USG, doppler, elec-tronic fetal monitors and plan for safe delivery for mother and fetus, identifying fetus at risk & its management.
- Infections in pregnancy (bacterial, viral, fungal, protozoal)
 - o malaria, toxoplasmosis.
 - o viral-rubella, CMV, Herpes, HIV, viral hepatitis(A,B,C etc.,).
 - o Sexually transmitted infections (STD's).
 - o Mother to fetal transmission of infections.
- Identification & management of fetal malpositions and malpresentations.
- Management of pregnancies complicated by gynecological diseases, congenital genital tract developmental anomalies, gynaecological pathologies fibroid uterus, cancer cervix, genital prolapse etc.
- Prenatal diagnosis of fetal abnormalities & fetal therapy.
- MTP and PNDT act.
- National health and MCH programmes, social obstetrics and vital statistics
- Recent advances in Obstetrics.
- Normal labour mechanism & management.
- Partographic monitoring of labour progress, recognition of abnormal labour and its appropriate management.
- Induction and augmentation of labour.

- Identification and conduct of abnormal labour and complicated delivery – malpresentations, malpositions, abnormal uter-ine action, obstructed labour and cervical dystocia.
- Forceps delivery, caesarean section & destructive operations.
- Management of abnormal labour abnormal pelvis, soft tissue abnormali-ties of birth canal.
- Analgesia &anaesthesia in labour.
- Maternal & fetal monitoring in normal & abnormal labour (including elec-tronic fetal monitoring).
- Identification and management of intrapartum complications- cord pre-sentation, cord prolapse, complications of 3rd stage of labour post partumhaemorrhage, retained placenta, inversion of uterus & rupture of uterus.
- Management of secondary post partumhaemorrhage.
- Complications of 3rd stage of labour management of primary & secondary postpartum hemorrhage, retained placenta, uterine inversion, postpartum collapse and amniotic fluid embolism.
- Identification & management of genital tract trauma perineal tear, cervi-cal/vaginal tears, episiotomy complications & rupture uterus.
- Management of critically ill women.
- Coagulation disorders including DIC & use of blood and blood components/products.
- Postpartum contraception.
- Breast feeding practice, counseling & importance of breast-feeding, prob-lems in breast-feeding and their management, baby friendly practices.
- Problems of newborn at birth (resuscitation) & management of early neo-natal problems.
- Normal and abnormal puerperium sepsis, thrombophlebitis, mastitis, psy-chosis.

iii. Clinical Gynaecology

- Epidemiology and etiopathogenesis of gynaecological disorders.
- Diagnostic modalities and management of common benign and malignant gynaecological diseases :
 - o Fibroid uterus
 - o Endometriosis & adenomyosis
 - o Endometrial hyperplasia
 - o Genital prolapse(uterine & vaginal)
 - o Cervical erosion, cervicitis, cervical polyps, cervical neoplasia.
 - o Vulval and vaginal cysts, infections, benign lesions and intra epithelial neoplasia.
 - o Benign ovarian pathology
 - o Malignant genital neoplasia of-ovary, fallopian tubes, uterus, cervix, va-gina, vulva, gestational trophoblastic diseases and carcinoma breast
- Diagnosis and surgical management of clinical conditions related to congenital malformations of genital tract, reconstructive surgery in Gynaecology.
- Intersex, ambiguous sex and chromosomal abnormalities.
- Reproductive endocrinology: evaluation of primary & secondary amenorrhoea, man-agement of hyperprolactinemia, hirsuitsm, chronic anovulation, PCOD, thyroid and other endocrine dysfunctions.
- Infertility evaluation and management.
- Methods of ovulation induction.
- Tubal (micro) surgery.
- Management of immunological factors of infertility.
- Male infertility.
- Obesity.
- Introductory knowledge of advanced assisted reproductive techniques (ART).

- Reproductive tract infections (syndromic approach) prevention, diagnosis & treatment of:
 - o STD
 - o HIV
 - o Other infections
 - o Genital tuberculosis.
- Principles of radiotherapy and chemotherapy in gynaecological malignancies - choice, schedule of administration & complications of such therapies.
- Rational approach in diagnosis and management of endocrinal abnormalities such as: menstrual abnormalities, amenorrhoea (primary/ secondary), dysfunctional uterine bleeding, polycystic ovarian disease, hyperprolactinemia (galactorrhoea), hyperandrogenism, thyroid, pituitary and adrenal disorders.
- Urological problems in Gynaecology diagnosis and management.
 - o urinary tract infection
 - o uro-genital fistulae
 - o incontinence
 - o other urological problems
- Orthopedic problems in Gynaecology.
- Menopause: management (HRT) and prevention of its complications.
- Endoscopy -laparoscopy and hysteroscopy.
- Recent advances in Gynaecology diagnostic & therapeutic.
- Pediatric, adolescent & geriatric Gynaecology.
- Recognize importance of good health of the adolescent and postmenopausal women.
- Identification and management of health problems of postmenopausal women.
- Understanding of social, educational and health needs of adolescent girls

& menopausal women, planning and implementation of intervention programmes.

- Education regarding rights and confidentiality of women's health, specifically related to reproductive function, sexuality, contraception and safe abortion.
- Geriatric problems.
- Epidemiology of RTI and HIV infection in Indian women of reproductive age group, cause, effect and management of these infections.
- HIV infections in pregnancy, its effect and management.
- Relationship of RTI & HIV with gynaecological disorders.
- Planning and implementation of preventive strategies.
- Knowledge and correct application of various Acts and laws while practicing Obstetrics and Gynaecology, particularly MTP act and PNDT act.
- Knowledge about importance of proper recording of facts regarding history, examination findings, investigation reports and treatment administered to all the patients.
- Knowledge of steps recommended for examination and management of rape cases.
- Knowledge of steps taken in the event of death of a patient.
- Concept of safe disposal of human body fluids and other materials.
- Universal precautions need to be taken in examination of the patient and surgical procedures for the prevention of HIV and other diseases.
- Effect of environment on pregnancy outcome.

iv) Operative obstetrics and Gynaecology, New born and Social obstetrics

- Surgical decision-making & technique including management of complications.
- Vaginal instrumental delivery, caesarean section, obstetric hysterectomy, destruc-tive operations, manipulations (external cephalic version, internal podalic version, manual removal of placenta etc)

- Medical termination of pregnancy safe abortion, selection of cases, technique & management of complication and MTP Act.
- Abdominal & vaginal hysterectomy.
- Surgical procedures for genital prolapse, fibromyoma, endometriosis, ovarian, adnexal, uterine, cervical, vaginal and vulval pathology.
- Surgical treatment for urinary & other fistulae, urinary incontinence.
- Operative endoscopy.
- Care of new born: normal and high risk new born (including NICU care).
- Asphyxia and neonatal resuscitation.
- Neonatal sepsis prevention, detection & management.
- Neonatal hyperbilirubinemia investigations & management.
- Birth trauma detection & management.
- Detection and management of neonatal malformation.
- Management of common neonatal problems.
- Definition of demography and its importance in Obstetrics and Gynaecology.
- Statistics regarding maternal mortality, perinatal mortality/morbidity, birth rate & fertility rate.
- Organizational and operational aspects of National Health Policies & Programs, in relation to population and family welfare including RCH.
- Various temporary and permanent methods of male and female contraception.
- Knowledge of contraceptive techniques (including recent developments).
 - o Temporary methods.
 - o Permanent methods.
 - o Recent advances in contraceptive technology.
- Provide adequate services to service seekers of contraception including follow up.

- Medical termination of pregnancy Act, its implementation, providing safe and adequate services.
- Demography & population dynamics.

2) Clinical / Practical Skills

Obstetrics:

- Provide basic antenatal care.
- Identify and manage high risk pregnancy.
- Diagnose normal and abnormal labour.
- Conduct normal delivery.
- Perform episiotomy.
- Diagnose and manage post partumhaemorrhage.
- Diagnose and manage other common obstetrical emergencies.
- Obstetric Drills
- Grief counselling & breaking bad news
- Patient safety

Gynaecology:

- Perform per speculum and vaginal examination.
- · Diagnose and manage common gynaecological diseases.
- · Insertion and removal of IUCD.
- Perform Pap smear, VIA, VILI.

3) Operative Skills:

Essential list of Surgical proceduresto be done INDEPENDENTLY:

OBSTETRICS:

- Conduct normal deliveries.
- Episiotomy and its repair.
- Application of forceps &ventouse (20).
- Carry out caesarean sections (20).
- Manual removal of placenta.
- Management of obstetrical genital tract injuries.
- Postpartum sterilization / minilap tubal ligation (10).
- Medical termination of pregnancy.

GYNAECOLOGY:

- Endometrial / cervical biopsy.
- Dilatation& curettage.
- Vaginal & abdominal hysterectomy.

TO ASSIST SENIOR SPECIALIST / CONSULTANT:

- Operative management of ectopic pregnancy
- Operations for vaginal wall prolapse.
- Laparotomy for ovarian tumours.

THE POSTGRADUATE STUDENT MUST OBSERVE AND/OR ASSIST WHEN POSSIBLE

1. OBSTETRICS :

- Caesarean hysterectomy.
- Internal iliac artery ligation.
- Internal podalic version.
- Destructive obstetrical operations.

2. GYNAECOLOGY:

- Tubal microsurgery.
- Radical operations for gynaecological malignancies.
- Repair of genital fistulae.
- Operations for incontinence.
- Myomectomy.

- Laparoscopic surgery.
- Hysteroscopic surgery.

OPERATIONS TO BE OBSERVED AND/OR ASSISTED WHEN POSSIBLE :

1. OBSTETRICS

- Caesarean hysterectomy.
- Internal iliac artery ligation.
- Internal podalic version.
- Destructive obstetrical operations.

2. GYNAECOLOGY

- Tubal microsurgery.
- Radical operations for gynaecological malignancies & repair of genital fistulae.
- Operations for incontinence.
- Myomectomy.
- Laparoscopic surgery.
- Hysteroscopic surgery.

Diagnostic procedures:

1. OBSTETRICS:

Sonographic images at various stages of normal pregnancy, abnormal pregnancy & fetal biophysical profile.

Fetal surveillance methods – electronic fetal monitoring and its interpretation.

2. GYNAECOLOGY:

Ultrasonographic diagnosis of common gynaecological pathology.

Interpretation of x-rays – hysterosalpingography.

Pap smear.

Colposcopy and colposcopic guided procedures.

Endoscopy – laparoscopy & hysteroscopy.

IV. TEACHING AND LEARNING ACTIVITIES:

A) Theoretical Teaching:

- **1.** Lectures: Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.
- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.
- **3. Subject Seminar:** Recommended to be held once a week. All the PG 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 timetable for the subject with names of the students and the moderator should be announced in advance.
- 4. Case Discussion: Recommended to be held once a week. All the PG 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 timetable for the case presentation with names of the students should be announced in advance.
- 5. Ward Rounds: Ward rounds may be service or teaching rounds.
 - a) Service Rounds: Postgraduate students should do service rounds every day for the care of the patients. Newly admitted patients should be worked up by the post graduate student and presented to the faculty members the following day.
 - b) Teaching Rounds: Every unit should have 'grand rounds' for teaching purpose at the bed side. A diary should be maintained for day-to-day activities by the post-graduate students.

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

6. Clinico-Pathological Conference: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 CPCs.

7. Inter Departmental Meetings: Strongly recommended particularly with departments of Pathology, Paediatrics and Radio-Diagnosis at least once a month. These meetings should be attended by post-graduate students and relevant entries must be made in the Log Book.

Pathology: Interesting cases shall be chosen and presented by the post-graduate students and discussed by them as well as the senior staff of Pathology department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advanced immuno-histo-chemical techniques, the burgeoning markers, other recent developments can be discussed.

Paediatrics: Perinatal Mortality meetings will be held once in a month along with Paediatrics staff.

Radio-diagnosis: Interesting cases and the imaging modalities should be discussed. Emphasis should be given for the radiological differential diagnosis.

- 8. Mortality Meeting: The mortality meeting should be conducted in the department whenever there is mortality. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records will be discussed in detail during this meeting.
- **9. Teaching Skills:** Post-graduate students must teach undergraduate students (eg. Medical, Nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. Assessment is made using a checklist by medical faculty as well as by the students. Record of their participation is to be kept in Log Book. Training of Postgraduate students in Educational Science and Technology is recommended.
- **10. Continuing Medical Education Programmes (CME):** Recommended that at least 1 state level CME programmes should be attended by each student during the course.
- **11. Conferences:** Attending conference is compulsory. Post-graduate student should attend one national and one state level conference during the course.
- **12. Research Activities:** The Post-graduate students to be encouraged to carry out research activities in the department, institution and or community and it is desirable to present/ publish their research work.

13. Orientation classes for new postgraduate students

- a. Standardized Case Paper Writing
- b. Conduct of normal labour
- c. AMTSL
- d. Intranatal care
- e. Complications of labour
- f. Diagnosis and management of fetal distress
- g. Operative deliveries
- h. Obstetric emergencies
- i. Episiotomy repair
- j. BLS training Programme
- k. New born care
- I. Critical care and ICU Management

B) Clinical / Practical Training:

2.

1. Rotation postings in OBG sub specialities :

Ultrasonography	- 4 weeks
Assisted Reproductive Centre	- 8 weeks
Preventive Gynae Oncology	- 2 weeks
Posting in Cancer Hospital on Rotation	- 2 weeks
Ancillary Postings:	

Neonatology - 2 weeks

Anaesthesiology - 1 week

V. OTHER CRITERIA TO BE FULFILLED FOR THE DEGREE COURSE:

1. Internal evaluation:

During the course of three years, the department will conduct three tests, each at the end of first year, second year and third year. The third test will a preliminary

examination which may be held three months before the final examination. The test may include the written papers, practicals / clinicals and viva-voce. Records and marks obtained in such tests will be maintained by the Head of the department and will be sent to the University when called for.

Results of all evaluations should be entered into P.G's logbook/diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/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. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures preformed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the University practical/clinical examination.

Special Mention of ARC and Ultrasound Posting

3. Dissertation

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

For details regarding Dissertation: Refer 9.1 to 9.10 of Chapter-I

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory, dissertation is accepted.

i) Theory: 400 Marks

There shall be four papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No. of	Marks for each question	Total Marks
	Questions		
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Basic sciences and medical genetics.

Clinical Obstetrics.

PAPER III : 100 marks

Clinical Gynaecology.

PAPER IV :.....100 marks

Recent Advances

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

SI.No.	Type of case	No.of cases	Marks	Total
1)	Obstetrics Long case	1	100	
2)	Obstetrics Short case	1	50	300
3)	Gynaecology Long	1	100	
	case			
4)	Gynaecology Short	1	50	
	case			

B. Clinical Examination: 300 Marks

C. Viva -Voce Examination: 100 Marks (80 + 20)

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills

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 given case reports. charts, gross specimens. histo pathology slides. X ray, ultrasound. CT scan images, etc. for interpretation. Questions on operative surgery will be asked. Students knowledge on the use of instruments and drugs pertaining to the subject will also be evaluated during viva – voce examination.

2) Pedgogy Exercise and Log Book - [20 marks]

D. Maximum Marks:

Maximum marks for Degree in Obstetrics	Theory	Practical	Viva- voce	Grand Total
&Gynaecology(MS)	400	300	100	800

E. Passing Criterion.

To pass the examination the candidate much secure 50% of the marks in each head of theory and practical separately.

SI.	Name of the Textbook	Authors	Publisher
No.			
1	Practical obstetrics	Ian Donald	B. I. publications
	problems	Editor –RenuMisra	
2	Practical guide to high risk	Editors - Fernando Arias,	Elsevier's publications
	pregnancy & delivery	Shirish. N. Daftary,	
		Amarnath. G .Bhide	
3	Text book of Obstetrics	William's	McGraw Hill publications
4	Manual of Obstetrics	Holland	BIP publications
5	Principles of Gynaecology	Jeffcoate's	Jaypee Publications
		Editors- Pratap Kumar,	
		Narendra Malhotra	
6	Textbook of Gynaecology	Shaw's	Elsevier's publications
7	Textbook of Gynaecology	Dutta	Central publications
8	Textbook of Obstetrics	Dutta	Central publications
9	Practical Gynaecology&	Parulekar	Vora publications
	Obstetrics		
10	Operative obstetrics	Munrokerr's	A.T.B.S. publications
11	Textbook of operative	Shaws	Churchill Livingstone (Elsevier
	gynaecology		publications)
12	Operative Gynaecology	Te Linde's	Lippincott Williams
			andWilkins publications
13	Medical disorders during	Michael De Sweit	Mosby publications
	pregnancy		
14	Obstetrics & Gynaecology	Rathnam	Universities Press Limited
15	The management of labour	Arulkumaran	Orient Longman publications
16	Clinical Gynaecology	Bhaskar Rao	Orient Longman publications

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

-			
17	Text book of Obstetrics &	C.S.Dawn	Magnohill. publications
	Neonatology		
1.0	Technicology	6 6 D	
18	Text book of Gynaecology	C.S.Dawn	B. B. publications
	and contraception		
19	J. Studd	Progress in Obstetrics	E- Aletsky's. publications
		&Gynaecology	
20	Padubidri	Text book of Obstetrics	Elsevier's publications
21	Novak's	Text book of	Lippincott Williams and
		Gynaecology	Wilkins publications
22	Dewhurst	Obstetrics and	Blackwell Science publications
		Gynaecology	
23	Bonney's	Gynaecological surgery	Blackwell Science
			publications
24	Callen	Ultrasonography	C.B.S. publications
25	D.K. James	High risk pregnancy	W. B. Saunders
		management options	(Elsevierpublications).

VIII. RECOMMENDED JOURNALS:

SI.	Name of the Journal
No.	
1.	Obstetrics & Gynaecology survey
2.	Obstetrics & Gynaecology clinics of North America
3.	Clinical Obstetrics & Gynaecology
4.	British journal of Obstetrics & Gynaecology
5.	American journal of Obstetrics & Gynaecology
6.	Journal of Obstetrics & Gynaecology
7.	Journal of FOGSI

POST GRADUATE DEGREE COURSE M.S. IN ORTHOPAEDICS

I. GOALS

A candidate upon successfully qualifying in the M.S. (Orthopaedics) examinations should:

- 1. Identify the diseases and injuries of musculo-skeletal system and obtain proper history and perform thorough clinical examination.
- 2. Plan and interpret investigations and institute the management in diseases and injuries of musculo-skeletal system.
- 3. Acquire scientific temper for teaching and research in the discipline/subject
- 4. Acquire skills to manage Orthopaedic services.
- 5. Organise rehabilitative services to the physically handicapped persons.

II. **OBJECTIVES** :

Knowledge:

At the end of the course the student should be able to describe:

- 1. The mode of injury, clinical presentation, plan & interpret investigations and institute the management of musculoskeletal injured patient.
- 2. Identify the bones, joints, ligaments, muscles and nerves of
 - a. upper limb
 - b. lower limb
- 3. The course and distribution of major arteries, veins and nerves of
 - a. upper limb
 - b. lower limb
- 4. The non operative and operative management and complications of fractures of limb bones in

- a. adults
- b. children
- 5. The mechanism of metabolic response to trauma and infections.
- 6. The process of fracture healing in
 - a. closed fractures
 - b. open fractures
 - c. delayed union
 - d. non-union
 - e. bone transportation
 - f. infections
- 7. The structure and function of diaphragm, abdominal wall, thorax, pelvis and their contents in relation to trauma and diseases.
- 8. The mode of injury & clinical presentation, plan and interpret investigations and institute management of
 - a. fracture of pelvis
 - b. fracture of ribs
- 9. The mechanism of haemostasis, fibrinolysis and methods to control hemorrhage
- 10. The structure and function of the vertebral column, the muscles, ligaments, vertebrae, intervertebral disc, spinal cord, meninges, related blood supply in
 - a. normal person
 - b. disorders and deformities of spine
- 11. The mode of injury, clinical presentation, plan & interpret investigation, prognostic factors, institute management of:
 - a. fracture of vertebral column
 - b. spinal cord injured patients

- 12. The morphogenesis of axial and appendicular skeleton
- 13. The normal structure, function and growth changes in the following:
 - a. Bone
 - b. Cartilage
 - c. Skeletal muscles
 - d. Joints
 - e. Nerves
- 14. The response of bone and cartilage to injury, diseases and degenerative conditions.
- 15. The clinical presentation, plan and interpret investigations, institute management and prevention of the following:
 - a. Nutritional deficiency diseases affecting the bones
 - b. Deposition arthropathies'
 - c. Endocrine abnormalities affecting bones
 - d. Crystal arthropathies
 - e. Skeletal dysplasias
 - f. Spinal dysraphism
 - g. Congenital Anomalies of spine & limbs
 - h. Developmental skeletal disorders
- 16. The causative factors, clinical presentation, plan and interpret investigations, prevention and institute the management of:
 - a. acquired limb deformities
 - b. Limb length inequalities
- 17. The pathogenesis, clinical features, plan and interpret investigations and institute the management in adults & children in. tubercular. pyogenic and mycotic infections of bones and joints.

- a) Rheumatoid arthropathy
- b) Ankylosing spondylitis
- c) Osteo-arthrosis and spondylosis
- d) Sero-negative arthropathies
- 18. The pathogenesis, clinical presentation, plan and interpret investigations and institute appropriate interventions in the following:
 - a. Poliomyelitis
 - b. Cerebral palsy
 - c. Muscular dystrophies
 - d. Nerve injuries (acute and entrapment neuropathies)
- 19. The etiology & pathogenesis, clinical presentation, plan and interpret the investigations and institute management of the musculo skeletal manifestations of:
 - a.Bleeding disorders
 - b.Haemoglobinopathies
 - c.Osteonecrosis of bones
- 20. The musculo skeletal manifestations of AIDS and plan the management
- 21. The etiology &pathogenesis, plan and interpret investigation and institute the management of osteonecrosis of bones.
- 22. Identify situations requiring rehabilitation services and prescribe suitable orthotic, prosthetic appliances and act as a member of team providing rehabilitative care
- 23. Identify a problem, prepare a research protocol, conduct a study, record observations, analyse data, intepret the results, discuss and disseminate the findings.
- 24. Identify emergency situations like disaster and plan disaster management at district/ zonal/tertiary care hospital and identify learning objectives in different situations for the medical team and facilitate teaching learning activities.

2) SKILLS :

Students should be able to do the following:

- 1. Manage wound and skin graft
- 2. Manage shock and resuscitation
- 3. Resuscitate injured patients
- 4. Expose & repair the femoral, popliteal and brachial artery.
- 5. Incision and drainage of abscesses
- 6. Biopsy-closed & open
- 7. Aspiration and infiltration of all joints
- 8. Application all types of casts, splints & tractions
- 9. Closed reduction of fractures
- 10. Recognize compartment syndrome and perform surgical decompression
- 11. Open reduction/internal fixation of unreduced dislocations
- 12. Internal fixation of common fractures of long bones of limbs
- 13. Debridement
- 14. Apply external fixators
- 15. Arthrotomy/synovectomy of all joints
- 16. Surgical decompression in case of acute osteomyelitis
- 17. Sequestrectomy and saucerisation
- 18. Release operation in common entrapment syndromes and other orthopaedic problems
- 19. Tendon transfer and repair, open hand injuries
- 20. Nerve repair
- 21. Local steroid infiltrations in the soft tissues & joints

- 22. Arthrodesis of joints
- 23. Meniscectomy
- 24. Correct common deformities of limbs by conservative/surgical procedures
- 25. Amputations and disarticulations
- 26. Skin grafting and flaps
- 27. Excision of benign tumor, cysts and cyst like conditions of bones and soft tissues.
- 28. Limb salvage surgeries in malignant bone tumours
- 29. All types of bone grafting techniques.
- 30. Excisional arthroplasty and hemiarthroplasty
- 3) Human values, Ethical practice and Communication abilities.
 - Adopt ethical principles in all aspects of his/her practice. Professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, cast, creed or religion of the patient.
 - Develop communication skills, in particular skill to explain various options available in management and to obtain a true informed consent from the patient.
 - 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 limitation in his knowledge and skill and to ask for help from colleagues when needed.
 - Respect patients rights and privilege including patients right to inform and right to seek a second opinion.

III) COURSE CONTENTS

A) BASIC SCIENCES: ANATOMY, PHYSIOLOGY, BIOCHEMISTRY, PATHOLOGY, MICROBIOLOGY, PHARMACOLOGY, MEDICOLEGAL ASPECTS AND BIOMECHANICS 1) Anatomy : Embryology, & Development of Musculoskeletal System; Histology.

Anatomy of spine, shoulder girdle, chest, Abdomen, pelvic girdle, upper limb & lower limb.

- 2) Physiology: Physiology of Musculo skeletal system, Bone metabolism, Hormonal Control of Musculo skeletal system.
- 3) Bio Chemistry: Bio chemical aspects related to Orthopaedics.
- 4) Pathology: General pathology: Pathology related to Orthopaedics.
- 5) Biomechanics: Biomechanics of Trunk and Limbs.
- 6) Pharmacology: Anti inflammatory, Antibiotics, Anti malignant drugs and other related pharmacotherapeutic drugs.
- 7) Suture materials
- 8) Implant materials

B) ORTHOPAEDICS TRAUMATOLOGY :

At the end of the course the students should be able to describe basic concepts and mechanisms of injury, clinical presentation, interpret investigations, plan and institute the management of musculo skeletal injured patients and to recognize complications and their efficient management.

Head injury & fasciomaxillary injury.

General principles of management of neurovascular injury.

Management of polytrauma.

Consequences of musculoskeletal trauma & rehabilitation of the injured.

General principles of management of musculoskeletal trauma – surgical & conservative.

Shock and its management.

Metabolic response to trauma and infections.

Fracture healing, closed and open fractures, problems of union.

Diagnosis of non union& management.

Musculo skeletal trauma.

Regional: Cervical, Thoracic, Lumbar and sacral injuries.

Shoulder girdle, pelvic girdle, upper limb & lower limb.

Instruments & implants in orthopaedic trauma management.

Arthroscopy, Shoulder, Knee etc, Hemiarthroplasty shoulder joint

C) ORTHOPAEDIC DISEASES:

Aetio-pathogenesis, clinical features, investigations and management of congenital and acquired limb deficiencies and deformities

Nutritional deficiency disease affecting bone & joints

Metabolic & hormonal osteoarthropathies

Skeletal dysplasias and developmental diseases

Infective diseases of musculoskeletal system, polio, Pyogenic, tubercular, mycotic bone and joint infections

Rheumatoid arthropathy, rheumatic disease

Osteoarthritis

Ankylosing spondyloarthropathies

Sero negative spondyloarthropathies

Cerbral palsy, poliomyelitis

Muscular dystrophies

Nerve injuries

Bleeding disorders, haemoglobinopathies, osteonecrosis of bones (Perthes, Osgoodschlatters, Kienbocks disease, Severs diseases etc.)

Musculoskeletal tumours

Amputations

Prosthetics & Orthotics and physical medicine

Musculoskeletal aids, orthotics & prosthesis

Non traumatic miscellaneous disorders of musculoskeletal system

Evaluation of physical disability

D) SPORTS MEDICINE AND ARTHROSCOPY

E) DIAGNOSTIC SKILLS AND KNOWLEDGE OF

- a) Radiology: i) Plain radiology, CT Scan, MRI, , Bone scan & Ultrasonography
 - ii) Interventional radiography: Myelography, Sinogram, Arthrography,& CT guided biopsy
- b) Biopsy: FNAC, Trocar & Open biopsy
- c) Arthroscopy

F) SURGICAL SKILLS TO ACQUIRE:

- 1. Management of shock in injured person
- 2. Incision and drainage of abscess
- 3. Aspiration and infiltration of joints
- 4. Closed reduction of fractures
- 5. Application of casts, splints & tractions
- 6. Fracture fixation: closed / open reduction & internal fixation of bones
- 7. Knowledge of wound debridement & application of external fixators
- 8. Arthrotomy& synovectomy
- 9. Arthroplasty & Arthrodesis
- 10. Foot and ankle surgery
- 11. Plastic reconstruction and other reconstructive procedure of musculoskeletal trauma.

- 12. Acetabular fracture fixation and pelvic osteotomies
- 13. Elbow and hand surgery
- 14. Deformity correction with Illizarov, L.R.S(Limb Reconstruction system) etc..
- 15. Spine surgeries
 - 1. Disc surgery
 - 2. Instrumentation in spine
 - 3. Surgical procedure in T.B spine
 - 4. Deformity correction in spine
- 16. Amputations
- 17. Epidural injection for pain relief

IV. TEACHING AND LEARNING ACTIVITIES:

A. Theoretical Teaching:

- **1.** Lectures: Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.
- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.
- 3. Subject Seminar: Recommended to be held once a week. All the PG 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 timetable for the subject with names of the students and the moderator should be announced in advance.
- 4. Case Discussion: Recommended to be held once a week. All the PG 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 timetable for the case presentation with names of the students should be announced in advance.

- 5. Ward Rounds: Ward rounds may be service or teaching rounds.
 - Service Rounds: Postgraduate students should do service rounds every day for the care of the patients. Newly admitted patients should be worked up by the post graduate student and presented to the faculty members the following day.
 - Teaching Rounds: Every unit should have 'grand rounds' for teaching purpose at the bed side. A diary should be maintained for day-to-day activities by the post-graduate students.

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

- 6. Clinico-Pathological Conference: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 CPCs.
- 7. Inter Departmental Meetings: Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a month. These meetings should be attended by post-graduate students and relevant entries must be made in the Log Book.

Pathology: Interesting cases shall be chosen and presented by the postgraduate students and discussed by them as well as the senior staff of Pathology department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advanced immuno-histo-chemical techniques, the burgeoning markers, other recent developments can be discussed.

Radio-diagnosis: Interesting cases and the imaging modalities should be discussed. Emphasis should be given for the radiological differential diagnosis.

8. Mortality Meeting: The mortality meeting should be conducted in the department every month. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records will be discussed in detail during this meeting.

- **9. Teaching Skills:** Post-graduate students must teach under graduate students (eg. Medical, Nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. Assessment is made using a checklist by medical faculty as well as by the students. Record of their participation is to be kept in Log Book. Training of postgraduate students in Educational Science and Technology is recommended.
- **10. Continuing Medical Education Programmes (CME):** Recommended that at least 1 state level CME programmes should be attended by each student during the course.
- **11. Conferences:** Attending conference is compulsory. Post-graduate student should attend one national and one state level conference during the course.
- 12. Research Activities: The Post-graduate students to be encouraged to carry out

research activities in the department other than dissertation work.

B) Clinical / Practical Training:

Ist 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, Tenotomy etc.

Basic Life Support Course and basic Skill Course

IInd Year

Trauma

Tension band wiring of fracture patella, fracture olecranon, etc

DCP of forearm bones, tibia, etc

DHS

Interlocking nailing of long bone fractures

Non traumatic conditions

Carpal tunnel release

Bone grafting

Soft tissue release under supervision

IIIrd Year

Trauma

Hemi arthroplasty of femur

Dynamic condylar screw fixation

Acetabular fracture fixation

Hemi arthroplasty of shoulder joint

Non traumatic conditions

Osteotomies

Soft tissue release

Tendon transfers

Basic arthroscopy (diagnostic)

Advanced Skill Course in Orthopaedics

A] Basic graduate skills

The students should have acquired the certain skills during his under-graduation and internship. These skills have to be reinforced at the beginning of the training periods. These skills include:

Procedure	Category	Year	Number
Insertion of I.V. lines. nasogastric tube, urinary catheters,	PI	_	50
etc.			
Minor suturing and removal of sutures	PI	-	50
Removal of tubes and drains	PI	I	50
Routine wound dressings	PI		50

B] Ward Procedure

Ward work forms an important part of the training of the surgeon. In addition to the routine examination of the patient with proper recording of findings, diligent practice of the following is recommended.

Procedure	Category	Year	Number
Effusion of joints & L.I.H.C.	PI	I	5
Ability to teach UG's and Interns	PI	I	NA
Blood sampling- venous and arterial	PI	I	NA
Bone Marrow Aspiration	PI		2
Major wound dressing	PI	I	10
Communication skills with patients, relatives colleagues and paramedical staff	PI	I	NA*
Ordering of the requisite laboratory and radiological investigations and interpretation of the reports in light of the clinical picture	PI	I	NA
Proficiency in common ward procedures	PA	I	NA
Skills for Per-rectal examination and Proctoscopy	PI	I	NA
Thoracocentesis	PI	II	5
Universal precautions against communicable diseases	PI	I	NA
Venesection.	PI	I + II	5

NA: Not Applicable.

C] ICU Procedure

Procedure	Category	Year	Number
Insertion of Arterial lines	PI	I + II	10
Insertion of Central venous lines	PI	I	10
Insertion of endotracheal tubes	PI	I + II	10
Intercostal Drainage	PI	+	5
Tracheostomy	PI	I	2
Working knowledge of ventilators and various Monitors	PI	I	NA
Interpretation of Arterial blood gases	PI	I	NA
Correction of Electrolyte disturbances	PI	I	NA
Prescribing Parenteral & Enteral nutrition	PI	I	NA

D] Emergency Room Procedure

Procedure	Category	Year	Number
Application of Splints for Fractures	PI	I	NA
Arterial and Venous Lines	PI	I	NA
Assessment and initial management of polytrauma	PI	I	NA
Cardiopulmonary Resuscitation	PI	I	NA
Procedure	Category	Year	Number
Management of Airway obstruction	PI	I	NA
Management of shock and Cardiac Respiratory failure	PI	I	NA
Recognition and Initial management of Orthopaedic	PI	I	NA
Emergencies			
Suturing Techniques	PI	I	NA

E] Pre-operative workup

Procedure	Category	Year	Number
Ability for adequate pre-operative preparation in special situations like diabetes, renal failure cardiac and	PI		NA
respiratory failure etc. and risk Stratification			
Communication skills with special reference to	PI		NA
obtaining informed consent			
Proper pre-operative assessment and preparation of	PI	I	NA
patients including DVT prophylaxis, Blood transfusion			
and Antibiotics			

F] Post-operative Care

Procedure	Category	Year	Number
Airway management	PI	I	NA
Basic Physiotherapy	PI	I	NA
Management of epidural analgesia	PI	I	NA
Management of Sinus	PI		NA
Management of postoperative hypo and hypertension	PI		NA
Postoperative pain control	PI	I	NA
Skills for nutritional rehabilitation of patients.	PI	I	NA
Skills for proper Fluid & Antibiotic management	PI	I	NA
Amputation stump care	PI	I	NA

G] Minor O.T. Procedure

Procedure	Category	Year	Number
Ganglion under Local Anesthesia	PI	I	5
Drainage of Abscesses	PI		5
FNAC	PI		5
Major dressings – Open fractures	PI		20
Release of compartment syndrome	PI	I	10
Minor Biopsies – Lymph node, ulcer swellings etc.	PI	I	20
Reduction and plaster application of simple fractures	PA		10
and dislocations			
Removal of simple subcutaneous swellings	PI		10
Arthrotomy, skeletal traction	PA/A/O	II	10
Suturing Techniques	PI	I	20
Arthroscopy	PA	I	5
Wound debridement	PI	II	10

H] Major Operating rooms techniques

Procedure	Category	Year	Number
Instrument arrangement and trolley layout	PA	-	NA
Skills in sterilization techniques. O.T. Layout and	0	-	NA
Asepsis			
Skin preparation- painting and draping	PI	_	NA
Techniques of scrubbing and gowning	PI		NA

I] Orthopaedic Operative Procedures

Procedure	Category	Year	Number
Percutaneous pin fixation for fractures	PI		10
External fixator application	PI	I	5
ORIF – Trochanteric fractures	PI and PA		1 and 3
Hemiarthroplasty – fracture neck femur	PA		2
Internal fixation for fracture shaft femur	PI		3
Internal fixation for fracture patella	PI		2
Internal fixation for fracture humerus	PI		2
Internal fixation for fracture both bones forearm	PI		3
Internal fixation for fractures of leg bones	PI	-	10
Management of complex fracture dislocation	PA/PI	11 /111	5
Open reduction of dislocations	PA		2
Management of complex wounds	PI	I	10
Diagnostic & Therapeutic Arthroscopy	PA		1
Arthroplasty of Hip & Knee	PA		3
Repair of peripheral nerve injuries	PA		3
Amputation & Disarticulation	PI		3
Vascular repair	PA		2
CTEV – Soft tissue release	PI		5
HDP Hubital Dislocation Patella	PA/PI	11/111	1
Laminectomy	PA		2
Quadriceps plasty	PI	II	5
Spinal fusion	PA		3
Discoidectomy	PA/PI	11/111	10
Pott's spine surgeries	PA	II	5
Osteotomies	PA/O	111/11	3
ORIF Pelvic Fractures	PA/O	III/II	3
Reconstructive Surgery Of Great Toe (Hallux	PA/O	III/II	5
Correction)			
Scoliosis Correction	PA/O	111/11	3
Tendon Transfers	PA/O	III/II	5
Tumour Surgery & Biopsy	PA/O	III/II	10
VI.C – Bone Shortening	PA/O	III/II	5
Wrist Fusion	PA/O	III/II	4
Oganesyan External Fixator	PA/O	III/II	3
Implant Removal	PI/O	II	10
Polio Reconstruction	PA/O		5
AVNFH Decompression With Fibula Graft	PA/O	III	6
Rotator Cuff Surgery	PA/O	III	3
Arthrodesis - Upper Limb	PA/O		5
Arthrodesis - Lower Limb	PA/O		6
Fixation of fractures of the small bones of hand & foot	PI/O		10

O-Observed, A – Assisted, PA – Performed with Assistance, PI – Performed Independently

1. Rotational Postings 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

Trauma / emergency medicine for 3 months, one month in 1^{st} year, one month in 2^{nd} year, one month in 3rd year

Anaesthesia for 2 weeks

Radiology including CT/ MRI for 2 weeks

Neurosurgery for one month

Plastic surgery for one month

Allied subjects

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

Training in teaching skills

Bedside clinic for undergraduates for 15 hours

Bedside clinic for first year PG by third Year PG for 15 hours

Should attend at least two national / state CME or Conferences during the course Should present at least one paper in any of the orthopedic conferences during the course.

V. OTHER CRITERIA TO BE FULFILLED FOR THE DEGREE COURSE:

1. Internal evaluation:

During the course of three years, the department will conduct three tests. Two of them will be annual, one at the end of first year and other at the end of second year. The third test will a preliminary examination which may be held three months before the final examination. The test may include the written papers, practicals / clinicals and viva-voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the University when called for.

Results of all evaluations should be entered into P.G's diary and departmental file for documentation purposes. Main purpose of periodic examination and

accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/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. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures performed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the University practical/clinical examination.

3. Dissertation:

Every candidate 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.

For details regarding DISSERTATION Refer 9.1 to 9.11 of Chapter-I.

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory and dissertation is accepted.

A. Theory: 400 Marks

There shall be four papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No. of	Marks for each question	Total Marks
	Questions		
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper I	- Basic and clinical sciences as appl	ied to Orthopedics - 100 marks
Paper II	- Musculo-skeletal Trauma	- 100 marks
Paper III	- General Orthopedics	- 100 marks
Paper IV	- Recent advances in Orthopedics	- 100 marks

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

B. Clinical / Practical Examination: 300 Marks

To elicit competence in clinical skills and to discuss differential, diagnostic and therapeutic aspects.

Types of Cases	No. of Cases	Marks
Long Case	1	100
Short Cases	3 (50 marks each)	150
Ward Rounds	2 Cases (25 each)	50
Total	6	300

C. Viva- Voce Examination: 100 Marks

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills.

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 given case reports, spirometry, ABG, gross specimens, histo-pathology slides, X-rays, ultrasound, CT scan images, PFT report, ventilation-perfusion scan images, etc., for interpretation and questions on these as well as use of instruments will be asked. Student's knowledge on use of instruments and drugs pertaining to the respiratory system will also be evaluated during viva-voce examination. It includes discussion on dissertation also.

2) Pedagogy Exercise and Log Book - [20 Marks]

(i) Candidate is asked to make a presentation for 8 – 10 minutes on a topic given in the beginning of clinical examination. 10 Marks

(ii). Candidate is asked to make a presentation for 8 - 10 minutes on the dissertation topic and the review of Log Book. 10 Marks

D. Maximum Marks:

Maximum marks for	Theory	Practical	Viva	Grand Total
M.S. III Orthopaedics	400	300	100	800

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

SI. No	Name of the Book	Author	Publisher
1.	Cambell's Operative	Terry Canale assistance	Mosby
	Orthopaedics,	by Kay Daughtery.	
2.	Fractures in Adults and	Charles. A. Rockwood Jr,	Lippincot, Williams
	Children	David Green, Robert. E.	& Wilkinson.
		Bucholz& James. D.	
	Turrelya Orth an addres	Heckman-Lippincot	
3.	Tureks Orthopeales	By- weinstein. SL. &	Lippincot, Williams
	Margar's Orthonoodic Surgary	Durlers,	& WIIKINSON.
4.	Mercer's Onnopaeure Surgery	Coorgo Roptlov	
5	Watson Jones Fractures & Joint	By L N Wilcon	Churchill
J.	Injuries		Livingstone
6	Total Hip Joint Replacement	Eftekhar N S	Moshy
7.	By- Gustilo	Fractures & Dislocations	Mosby
8.	Pediatric Orthopaedics	Sharrard	Blackwell Scientfic
9.	Pediatric Orthopaedics	Tachdain	W.B.Saunders
10.	Clinical Surgery	Das	S. Das.
11.	Clinical Orthopaedic	Ronald McRae	Churchill
	Examination		Livingstone
12.	Splints & Tractions in	Stewart	Churchill
	Orthopaedics		Livingstone
13.	Tuberculosis of Spine	Tuli. S. M.	Jaypee brothers

14.	AO Principles of Fracture		Colton. C. L. Fernandez.	Theime Medical
	Management		A.	Publishers.
15.	Manual of Internal Fixation		Muller & others	Springer
16.	Operative Arthroscopy		McGinty	Lippincot,
17.	Rothman-Simeon- The Spine		H.N.Herkowitz& Others	Saunders
18.	Lister's The Hand		Paul smith	Churchill
				Livingstone
19.	The Lumbar Spine	J. 1	N. Weinstein & S. W. Wiesel	Saunders
20.	Bone Tumors	J. 1	M. Mirra	Lee &Febiger
21.	Campbell's operative	12	th edition	Churchill
	Orthopaedics			Livingstone
22.	Insall& Scott surgery of	5^{th}	edition	Elsevier
	knee			

VIII. RECOMMENDED JOURNALS:

Journal of bone and Joint Surgery
American Journal of Orthopaedics
Clinical Orthopaedics and Related Research
Orthopaedic clinics of North America
Trauma
Arthroscopy
Indian Journal of Orthopaedics
Journal of Arthroplasty
Journal of Spine Surgery
ActaOrthopedica Scandinavia
J.Paed. Ortho

POST GRADUATE DEGREE COURSE M.S. IN OPHTHALMOLOGY

I. GOALS:

The candidate shall be able to practice ophthalmology competently and safely in the community that he/she serves. He /She shall be able to teach medical and paramedical professionals and be able to undertake research activities in the field of Ophthalmology.

II. OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the subheadings.

- 1. Knowledge
- 2. Skills
- 3. Human values, ethical practice and communication abilities.

1. Knowledge:

- a. At the completion of the course, candidate should demonstrate sound knowledge of clinical manifestations of common ophthalmic diseases, including emergency situations and investigative procedures to confirm the diagnosis.
- b. Demonstrate comprehensive knowledge of various modes of treatment, both medical and surgical.
- c. Be aware of his or her own limitations to the application of the specialty in situations which warrant referral to more qualified centers or individuals.
- d. Periodically self assess his or her performance and keep abreast with ongoing advances in the field and apply the same in his /her practice.

2. Skills:

a) On the completion of the course, the candidate shall be able to offer to the community, the current quality of 'standard of care' in ophthalmic diagnosis

as well as therapeutics, medical or surgical, in most of the common and easily managed situations at the District or Secondary level of health service.

- b) He should be able to plan the educational programmes for health professionals and be familiar with modern methods of teaching and evaluation.
- c) Apply research and epidemiological methods during his / her practice. The candidate shall be able to present or publish work done by him/her.

3. Human values, Ethical practice and Communication abilities:

- Adopt ethical principles in all aspects of his/her practice; professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his team in a congenial working atmosphere.
- Apply high moral and ethical standard 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 patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS:

1) Basic Sciences:

- i. Anatomy of the Eye and Adnexa
 - a. Gross anatomy
 - b. Histology
- ii. Physiology of the Eye
- iii. Pathology

- a. General pathology
- b. Ocular pathology: Gross pathology, Histopathology.
- iv. Biochemistry:
 - a. General Biochemistry,
 - b. Biochemistry applicable to ocular function,
- v. Microbiology
 - a. General Microbiology
 - b. Specific microbiology applicable to the eye
 - c. Immunology with particular reference to ocular immunology
- vi. Geometric and ophthalmic optics
 - a. Basic physical optics
 - b. Ophthalmic optics
 - c. Applied optics including optical devices

2. Clinical Ophthalmology

- 1. Disorders of Refraction
- 2. Disorders of the Lids
- 3. Disorders of the Lacrimal System
- 4. Disorders of the Conjunctiva
- 5. Disorders of the Sclera
- 6. Disorders of the Cornea
- 7. Disorders of the Uveal Tract
- 8. Disorders of the Lens
- 9. Disorders of the Retina and Vitreous
- 10. Glaucoma

- 11. Disorders of the Optic Nerve & Visual Pathway
- 12. Disorders of the Orbit
- 13. Ocular trauma
- 14. Strabismus
- 15. Ophthalmic Oncology
- 16. Neuro ophthalmology
- 17. Paediatric ophthalmology
- 18. Systemic ophthalmology (Ocular involvement in systemic disease)
- 19. Community Ophthalmology
- 20. Visual rehabilitation
- 21. Lasers in Ophthalmology
- 22. Ocular Therapeutics

i) CLINICAL

Essential Clinical skills - instrumentation

Refraction:

- a. Retinoscopy
- b. Subjective and objective refraction
- c. Use of Jackson's cross-cylinder
- d. Auto refractometer

Slit Lamp Examination:

- a. Diffuse examination
- b. Focal examination
- c. Retroillumination direct & indirect
- d. Sclerotic scatter

- e. Specular reflection
- f. Staining modalities and interpretation

Slit Lamp Accessories:

- a. Applanation Tonometry
 - i. Goldman's applanation tonometer
 - ii. Gonioscopy
 - Single mirror / 3 mirror gonioscope
 - Grading of the angle
 - Testing for occludability
 - Indentation gonioscopy
 - Four Mirror Gonioscope

Direct Ophthalmoscopy

- Distant direct Ophthalmoscopy
- Detailed fundus examination
- Use of filters and graticule

Indirect Ophthalmoscopy

- Fundus evaluation including scleral depression
- Fundus drawing capability
- Use of filters provided

Optical Coherence Tomography

- Principle
- Uses
- Interpretation
Slit Lamp Fundus Examination

- 3-mirror examination of the fundus
- 78-D/90-D/60-D examination

Tonometry

- Applanation tonometer
- Indentation (commonly Schiotz)

Keratometry

- Performance & interpretation of keratometry
- Diagnosis of situations such as keratoconus
- Keratoscopy

Assessment of epiphora

- Jone's dye test
- Syringing performance & interpretation

Dry eye evaluation

- Schirmer test
- Rose Bengal staining
- Tear film breakup time
- Tear meniscus evaluation

Corneal ulceration

- Taking a corneal scraping
- Inoculation into media
- Evaluation of Gram's stain
- Evaluation of KOH preparation

Colour vision evaluation

• Ishihara pseudoisochromatic plates

Use of Amsler's Grid

• Instructing in the use of and interpretation of the chart.

Fundus photography & fundus fluorescein angiography (FFA, FAG)

- Performance and interpretation of FFA
- Performance of indirect fluorescein angioscopy

Diagnosis & assessment of Squint

- Ocular position and motility examination
- Versions, ductions and vergences
- Convergence facility estimation
- Cover / Uncover / Alternate cover test
- Use of prism bars or free prisms in assessment of squint
- Use of Bagolini's striated glasses / red filters / Maddox rod
- Use of Worth's four dot test
- Use of major amblyoscope
- Use & interpretation of the Hess chart / Lees' screen
- Use of synoptophore

Exophthalmometry

• Measurement of proptosis or exophthalmos

Use and evaluation of ophthalmic ultrasound

- A- Scan ultrasound with biometry
- B- Scan ultrasound examination

Perimetry

- Kinetic Goldmann Perimetry
- Static computerized perimetry
- Interpretation of common field defects

Radiology

Interpretation of plain skull films:

- PA-20 (Caldwell's view)
- PNS (Water's view)
- Lateral
- Submentovertical
- Optic canal views

Localisation of intra ocular and intra orbital foreign bodies

Interpretation of CT – Scans of Orbit and Eye

Contact Lenses

- a. Assessment
- b. RGP fitting
- c. Soft lens fitting
- d. Troubleshooting

Low Vision aids

a. The basics of fitting with knowledge of availability & cost.

ii) SURGICAL

Essential surgical skills

Procedure	Nature of activity * & number			
	0	A	PA	PI
1. Operation theatre				
a. Anaesthesia:				
i. Retrobulbar anaesthesia				30
ii. Peribulbar anaesthesia				30
iii. Facial blocks				
* O' Brein				15
* Atkinson				15
* Van Lint & modifications				2
iv. Frontal blocks				1
v. Infra orbital blocks				1
vi. Blocks for sac surgery				3
b. Magnification: Familiarity with the use of				
Operating microscope is essential				
c. Lid Surgery:				
i. Tarsorrhaphy				5
ii. Ectropion and entropion procedures				1
iii. Lid repair following trauma			1	
iv. Epilation,				5
d. Destructive procedures:				
i. Evisceration with or without implant				1
ii. Enucleation with or without implant				3
e. Sac Surgery				
i. Dacrocystectomy				2
ii. Dacryocystorhinostomy				1
iii. Probing			1	

* The procedures that the student should have:

- O = Washed and Observed
- A = Assisted the operating surgeon
- PA = Performed with Assistance
- PI = Performed Independently

Procedure	Nature	Nature of activity * & number			
	0	A	PA	PI	
f. Extraocular muscle surgery					
i. Recession and resection procedures on the			1		
horizontal recti					
g. Cataract Surgery					
i. Standard ECCE with or without IOL			10	10	
implantation					
ii. Small incision ECCE with or without IOL			15	15	
implantation					
iii. Secondary AC or PC IOL implantation					
iv. Vectis extraction			1		
v. Phacoemulsification					
h. Orbit Surgery					
i. Anterior Orbitotomy		1			
ii. Lateral Orbitotomy					
i. Vitrectomy					
i. Anterior Open sky vitrectomy			\checkmark		
ii. Pars Plana vitrectomy					
iii. Intravitreal Injections				5	
j. Keratoplasty					
i. Penetrating keratoplasty		1			
k. Glaucoma Surgery					
i. Trabeculectomy			4	2	
ii. Iridectomy			\checkmark		
iii.Cyclocryotherapy				1	

* The procedures that the student should have:

- O = Washed and Observed
- A = Assisted the operating surgeon
- PA = Performed with Assistance
- PI = Performed Independently

Procedure	Nature	Nature of activity * & number			
	0	A	PA	PI	
I. Surface ocular procedures					
i. Pterygium excision with modifications				2	
ii. Conjunctival grafting			1		
iii. Amniotic Membrane		3			
m. Tarsorrhaphy				5	
2. Out patient:					
a. Manual diagnostic procedures such as				10	
syringing, conjunct ival swab collection,					
conjunctival scraping, corneal scraping,					
Grams's staining, KOH preparation etc.					
b. Conjunctival and corneal foreign body				5	
removal on the slit lamp					
c. Chalazion incision and curettage				5	
d. Su ture removal : skin, conjunctival,				5	
corneal, and corneoscleral					
e. Subconjunctival injection				20	
f. Posterior sub-Tenon's injections				5	
g. Artificial eye fitting				2	

* The procedures that the student should have:

- O = Washed and Observed
- A = Assisted the operating surgeon
- PA = Performed with Assistance
- PI = Performed Independently

RESEARCH

Essential Research Skills

- 1. Record keeping
 - a. The ability to maintain records as scientifically as possible
 - b. Knowledge of computer software is helpful

- 2. Basic statistical knowledge
 - a. Ability to undertake clinical & basic research
 - b. Descriptive and Inferential statistics
 - c. Ability to publish results of one's work
- 3. Ability to constructively criticize publications in the field.
- 4. Presentation: Ability to present one's work effectively at various scientific conferences.

MISCELLANEOUS

- A. Community Ophthalmology
 - a. Ability to organize institutional screening
 - b. Ability to organize peripheral eye screening camps
 - c. Knowledge and ability to execute guidelines of National Program for Prevention of Blindness.
- B. Organisational capabilities
 - a. Ability to organize meetings, seminars and symposia
 - b. Ability to get along with colleagues and work as a team with the other members of the department.
 - c. Ability to interact with and work as team with other disciplines that may exist in the same hospital.
- C. Teaching
 - a. The ability to pass on skills acquired to one's juniors, theoretical, procedural and surgical

IV. TEACHING AND LEARNING ACTIVITIES:

A) Theoretical Teaching:

- **1.** Lectures: Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.
- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.
- 3. Subject Seminar: Recommended to be held once a week. All the PG 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 timetable for the subject with names of the students and the moderator should be announced in advance.
- 4. Case Discussion: Recommended to be held once a week. All the PG 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 timetable for the case presentation with names of the students should be announced in advance.
- 5. Ward Rounds: Ward rounds may be service or teaching rounds.
 - a) Service Rounds: Postgraduate students should do service rounds every day for the care of the patients. Newly admitted patients should be worked up by the post graduate student and presented to the faculty members the following day.
 - b) Teaching Rounds: Every unit should have 'grand rounds' for teaching purpose at the bed side. A diary should be maintained for day-to-day activities by the post-graduate students.

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

- 6. Clinico-Pathological Conference: Clinico-Pathological Conferences are to be conducted atleast once in a year.
- 7. Inter Departmental Meetings: There will be interdepartmental clinical meetings with Neuro-Medicine, Dermatology and Paediatrics departments once in a month.
- 8. Teaching Skills: Post-graduate students must teach under graduate students (eg. Medical, Nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. Assessment is made using a checklist by medical faculty as well as by the students. Record of their participation is to be kept in Log Book. Training of postgraduate students in Educational Science and Technology is recommended.
- **9.** Continuing Medical Education Programmes (CME): Recommended that three CME programme should be attended by each student during the course.
- **10. Conferences:** Post-graduate student should present at least one research paper in national or state level conference in the form of oral or poster presentation. **Research Activities:** Post-graduate students should publish at least one research paper in national journal during the course of their study (paper accepted for publication is also considered)

B) Clinical / Practical Training:

1. Rotational Postings in other Departments:

The candidate shall undergo training in

a) Trauma care unit	- one month
b) Rural posting	- one month
c) Sub – specialty posting	- one month
d) Anesthesia Posting	- 15 days
e) Plastic Surgery / Neuro Medicine	- 15 days

f) Vitroretinal / oculoplasty in reputed institute of Karantaka - 1 month

Total 5 months posting

Additional Training Programme of PG students

- 1) A.L.S. Training Programme
- 2) Clinical Skill Lab Training.
 - a) General Ophthalmic Skills
 - b) Goat eye surgeries

V. OTHER CRITERIA TO BE FULFILLED FOR THE DEGREE COURSE:

1. Internal evaluation:

During the course of three years, the department will conduct three tests. Two of them will be annual, one at the end of first year and other at the end of second year. The third test will be a preliminary examination held three months before the final examination. The test may include the written papers, practicals / clinicals and vivavoce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the University when called for.

Results of all evaluations should be entered into P.G's logbook / diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/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. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures preformed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the University practical/clinical examination.

3. Dissertation:

The candidate has to select a research topic of his/her area of interest and submit for registration with the University along with the synopsis during the first six months of the course. He/She shall carry out the research work for a period of one year. He shall compile the data and prepare the dissertation to submit to the University six months before the final examination. The candidate shall appraise the progress of the dissertation work to the departmental dissertation committee periodically.

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory and dissertation is accepted.

A) Theory: 400 Marks

There shall be four papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No. of	Marks for each question	Total Marks
	Questions		
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper I :

- 1. Basic Sciences : Anatomy; Physiology; Pathology; Microbiology; Biochemistry
- 2. Optics and Refraction.
- 3. Ocular motility and Strabismus
- 4. Ocular Pharmacology
- 5. Instrumentation and Investigations in Ophthalmology

Paper II :

1. Clinical ophthalmology covering Diseases of the Eye: Disorders of Conjunctiva, Cornea, Sclera, Uvea, Lens, Glaucoma, Retina, Optic nerve.

2. Clinical ophthalmology covering Diseases of the Adnexa: Disorders of Lids, Lacrimal system, Orbit.

Paper III :

- 1. Ocular Immunology
- 2. Neuro-ophthalmology
- 3. Paediatric Ophthalmology
- 4. Systemic ophthalmology
- 5. Recent Advances

Paper IV:

- 1. Surgical Ophthalmology
- 2. Community Ophthalmology
- 3. Ophthalmic research.
- 4. Recent advances

Note: The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

B. Clinical Examination: 300 Marks

To elicit competence in clinical skills and to discuss differential diagnostic therapeutic aspects.

Type of Cases	Number of Cases	Marks for each Case	Total
Long Case	01	100	100
Short Case	02	50	100
Fundus Case	02	25	50
Refraction Case	02	25	50
GRAND TOTAL			300

C. Viva- Voce Examination: 100 Marks

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills. 1) Viva-voce examination – [80 Marks]

All examiners will conduct viva – voce conjointly on the candidates' comprehension, analytical approach, expression and interpretation of data.

Viva-voce shall include questions on the following topics:

- a. Surgical instruments displayed
- b. Pathology slides and Pathology gross specimens
- c. Microbiology slides
- d. Radiographs /CT scan films
- e. Perimetric charts / Indirect ophthalmoscopy drawings / Hess screen charts
- f. General ophthalmology
- g. Community ophthalmology

2) Pedgogy Exercise and Log Book – [20 marks]

- i. Candidate is asked to make a presentation on a topic assigned before the beginning of clinical examination. 10Marks
- ii. Candidate is asked to make a presentation for 8 to 10 minutes on the dissertation topic and the review of Log Book. 10Marks

D. Maximum marks

Maximum marks	Theory	Practical	Viva	Grand total
Ophthalmology	400	300	100	800

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

Sr.	Name of the Textbook	Authors	Publisher
No.			
1.	Clinical Ophthalmology,	Duane T.D,	Harper & Row
	Ist Ed. 1985	Jaeger E.A.	
2.	Principles & Practice of	Albert D.B, Jakobiec.	W.B. Saunders Company
	Ophthalmology Clinical	F.A.	
	Practice, 3rd Ed.2008		
3.	Principles & Practice of	Peyman G.A.	Jaypee Brothers
	Ophthalmology, 1 st Ed.		
	1987		
4.	System of Ophthalmology,	Elder. I. Duke	Henry kimpton
	Ist Ed. 1973		
5.	American Academy of		American Academy of
	Ophthalmology, Series		Ophthalmology
	2006-2007		
6.	Ophthalmology, 3 rd Ed.	Yanoff M. Duker J.S.	Mosby
	2009		
7.	Clinical Ophthalmology,	Kanski. J.J.	Butterworth & Heinemann
	6 th Ed. 2007		

	Cornea:		
8.	Smalin & Thofts The	Foster C.S., Azar. D.T	Lippin Cotts Williams - Wilkins
	Cornea, Scinetific,. 4th Ed.		
	2005		
9.	Graysons Diseases of the	Arffa R.C.	Mosby
	Cornea, 4 th Ed. 1997		
10.	Corneal Disorders –	H.M. Leibowitz	W.B. Saunders Company
	Clinical Diagnosis &		
	Glaucomert, Ist Ed. 1984		
11	Glaucoma:	Chields M. D	Mashu
11.	The Glaucomas, 2 ^m Ed.	Shields.M.B.	MOSDY
12	Manual of Claucoma	Krupin T	Churchill Livingstone
12.	Diagnosis & management		
	Ist Ed. 1998		
13	Diagnsosis & Treatment of	Backer's Shaeffer	Mosby
	the Glaucoma, 8 th Edition		
	Retinal Disease:		
14.	Retina, Ist Ed. 1989	Stephen Ryan	The C.V.Mosby Company
15.	Retinal Detachment, Ist	Michels.R.G, Wilkinson	The C.V. Mosby Company
	Ed. 1990	C.P.	
16.	Vitreous Microsurgery, 4 th	Steve Charles	Lippincott, Williams & Wilkins
	Ed. 2007		
	Ultra Sound:		
17.	Ultrasound of the Eye &	Byrne.S.F,	Mosby
	Orbit, 2 nd Ed. 2002	Green R.L.	
	Uvea:		
18.	Uvertis Fundamentals &	Nussenblatt.R.B,	Mosby
	Clinical Practice, 3 rd Ed.	Whitecup.S.M.	
10	2004	Smith R.F. Norik R.A	Millions & Milling
19.	Approach to Diagnosis &	SIIIIUI.K.E, NOZIK.K.A.	Williams & Wilkins
	Management 2 nd Ed 1989		
	Neuroophthalmology:		
20.	Neuro Ophthalmology	Walsh T. I.	William Wilkins
	Clinical signs & symtoms		
	4 th Ed. 1997		
	Tumors:		
21.	Diagnosis & Management	Jerry. A. Shields	W.B. Saunders Company
	of Orbital tumors, 1st Ed.		
	1989		
	Strabismus:		
22.	Binocular Vision & Ocular	Von Noorden	Mosby
	Motility, 5 th Ed. 1996		

	Ophthalmic Pathology:		
23.	Ophthalmic Pathology –	M.J.Hogan,	W.B. Saunders Company
	An Atlas & Text Book, 2 nd	L.E.Zimmermann	
	Ed. 1962		
24.	Ocular Pathology, 4 th Ed.	Myron Yanoff,	Mosby – Wolfe
	1996	Ben.S.Fine	
	Pharmacology:		
25.	Havener's Ocular	Thomas.F.Mauger,	Mosby
	Pharmacology, 6 th Ed	Elson.L.Graig	
	1994		
	Anatomy:		
26.	Wolff's Anatomy of the	A.J.Bron, R.C.Tripathi,	Chapman & Hall Medical
	Eye & Orbit, 8 th Ed. 1997	Brenda.J.Tripathi	
27.	Clinical Anatomy of the	R.S.Snell, M.A.Lemp	Blackwell Science
	Eye, 2 nd Ed. 1998		

VIII. RECOMMENDED JOURNALS:

Sr.	Name of the Journal
No.	
1.	American Journal of Ophthalmology
2.	British Journal of Ophthalmology
3.	Indian Journal of Ophthalmology
4.	International Ophthalmology Clinics of North America
5.	Journal of Cataract & Refractive Surgery
6.	Ophthalmology
7.	Eye (The Scientific journal of the Royal college of Ophthalmologist

ADDITIONAL READING :

- 1. Indian Council of Medical Research, "Ethical Guidelines for Biomedical Research on Human Participants", I.C.M.R, New Delhi, 2006.
- 2. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi.
- 3. Francis C M, Medical Ethics, J P Publications, Bangalore, 1993.
- 4. Indian National Science Academy, Guidelines for care and use of animals in Scientific Research, New Delhi, 1994.

- 5. Internal National Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N Engl J Med 1991; 424-8
- 6. Kirkwood B R, Essentials of Medical Statistics, 1st Ed., Oxford: Blackwell Scientific Publications 1988.
- 7. Mahajan B K, Methods in Bio statistics for medical students, 6th Ed. New Delhi, Jaypee Brothers Medical Publishers, 2004.
- 8. 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, Nirman Bhawan, New Delhi. P - 335.
- 9. National Health Policy, Min. of Health & Family Welfare, Nirman Bhawan, New Delhi, 1983.
- 10. Ananth Krishnan, Seth et al, Medical Education Principles and Practice, 1995. National Teacher Training Centre; JIPMER, Pondicherry.

POST GRADUATE DEGREE COURSE M.S. IN OTORHINOLARYNGOLOGY AND HEAD & NECK SURGERY

I. GOALS:

The goals of postgraduate training course would be to train a MBBS doctor who will

- Practice efficiently and effectively, backed by scientific knowledge and skill base.
- Practice Evidence Based Medicine (EBM) in the field of Otorhinolaryngology.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing education in the specialty irrespective of whether he/she is in a teaching institution or is a practicing surgeon.
- Be a motivated 'teacher' defined as a specialist keen to share his/her knowledge and skills with a colleague or a junior or any learner.

II. OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the subheadings.

- 1. Knowledge
- 2. Skills
- 3. Human values, ethical practice and communication abilities.

1. Knowledge:

- Demonstrate understanding of basic sciences relevant to his/ her specialty.
- Describe aetiology, pathophysiology, principles of diagnosis and management of common problems including emergencies in children, adults and old.
- Describe indications and methods for fluid and electrolyte replacement therapy including blood transfusion.

- Describe common malignancies in the country and their management including prevention.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning therapeutic measures.
- Recognize conditions that may be outside the area of his /her specialty/ competence and to refer them to the proper specialist.
- Advise regarding the operative or non operative management of the case and to carry out this management effectively.
- Judicial use of available investigations.
- Update himself/ herself by self study and by attending courses, conferences, symposia and seminars relevant to the specialty.
- Teach and guide his /her team, colleagues and other students.
- Undertake audit, use information technology tools and carry out research, both basic and clinical, with the aim of publishing and presenting his/her work at various scientific fora.

Skills

- Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition.
- Perform common operative procedures in ENT and Head & Neck.
- Provide basic and advanced life saving support services (BLS&ALS) in emergency situations.
- Undertake complete patient monitoring including the preoperative and post operative care of the patient.
- Tracheostomy as a planned or emergency procedure
- Percutaneous tracheostomy
- Practice post tracheostomy care.
- Intubation and Extubation skills.

3. Human values, Ethical practice and Communication abilities

- Adopt ethical principles in all aspects of his/her practice; professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.

Provide leadership and get the best out of his team in a congenial working atmosphere.

- Apply high moral and ethical standard while carrying out human or animal research.
- Be humble and accept the limitations in his / her knowledge and skill and to ask for help from colleagues when needed,
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS:

i) Theory

1. Basic Sciences

Anatomy of the ear/ physiology of hearing and equilibrium / anatomy and physiology of nose and paranasal sinuses / anatomy of pharynx and oesophagus / deglutition / anatomy of larynx and tracheobronchial tree / physiology of respiration/ physiology of reception and generation of speech. Surgical anatomy of skull base / cranial nerves / imaging and radiology pertaining to ear, nose, throat and head & neck / knowledge of immunology and microbiology as regarding ENT and head & neck/ radiotherapy and chemotherapy in head and neck cancers / wound healing / principles of laser surgery / basics of anaesthesia and intensive care in relation to ENT and head & neck / A thorough knowledge of anatomy of head and neck region including thyroid, neck spaces and salivary glands.Radiological Investigations like CT, MRI and PET. Navigational System and Robotic Surgeries in ENT, Sialoendoscopy, Voice disorders and Voice Clinic.

2. Audiology

(A)	(B)	(C)
a) Brief knowledge of	1)Epidemiology/ Prevention /	1)Diagnostic audiometry
acoustics	rehabilitation of balance &	
	hearing disorders	
b) Use of computers in	2) Hearing aids	2) Diagnostic testing of
audiological and vestibular		vestibular system
testing and rehabilitation		
	3) Cochlear implants	

3. Otology

Diseases of external auditory canal and middle ear – acute suppurative otitis media(ASOM), CSOM, complications of CSOM – plastic surgery of ear – otosclerosis – SN hearing loss in adults and children – vertigo – Meniere's disease – ototoxicity – vestibular schwannoma – tumours of middle ear cleft – glomusjugulare – disorders of facial nerve – cochlear implants.

Middle ear implants/BAHA(Bone anchaed hearing aid)/ Brainstem implants.

Rehabilitation of hearing handicapped including dispensing, hearing aid/speech therapy.

Early detection of hearing and its management/OAE (Oto acoustic emission)

4. Laryngology

Acute & chronic infections of oral cavity, pharynx, tonsils and larynx.

- Trauma & stenosis of larynx
- Management of obstructed airway and tracheostomy
- Disorders of voice
- Neurological affections of pharynx and larynx
- Laryngeal framework surgery, Vocal rehabilitation/ stroboscopy.
- Pharyngeal pouch
- Tumours of larynx
- Angiofibroma and nasopharyngeal lesions

• Facial & plastic reconstructive surgeries including facio- maxillary, cleft lip & palate and facial re – animation.

Tumours of oropharynx and lymphoma of head and neck

Tumours of hypopharynx

Benign diseases of the neck

The thyroid gland and its disorders

Diseases of salivary glands - neoplastic & non neoplastic

Tumours of infra temporal fossa and parapharyngeal space. The cysts, granulomas and tumours of jaw, nose and sinuses.

The oesophagus in otolaryngology, facial plastic surgery and reconstructive surgery of head and neck.

Terminal care of head and neck cancer

Chemo/Radio/Photodynamic therapy.

Neck masses.Neck space infections.

- 5. Rhinology
 - Radiology of nose and paranasal sinuses
 - Congenital anomalies of the nose
 - Conditions of external nose
 - Abnormalities of smell
 - Allergic rhinitis
 - Nasal polypi
 - Infective rhinosinusitis / complications and surgical management
 - Disorders and trauma of facial skeleton
 - Disorders of nasal septum
 - CSF rhinorrhoea

- Epistaxis
- Snoring and sleep apnea
- Chronic granulomas of nose and paranasal sinuses
- The orbit in relation to ENT
- Transsphenoidalhypophysectomy
- Overview of facial pain and headache
- Skull base surgery
- Extended endoscopic sinus surgery

Thrust areas:

- 1. Skull base surgeries
- 2. Snoring and sleep apnea
- 3. Laryngeal framework surgery
- 4. Rehabilitation of hearing impaired person
- 5. Ear trauma
- 6. Ototoxicity
- 7. Facial plastic reconstruction
- 8. Rehabilitation following treatment for Head & Neck cancer.
- 9. Extended endoscopic sinus surgery (Skull based endoscopic surgery).
- 10. Laryngeal electromyography.
- 11. Sialoendoscopy
- 12. Balloonsinusoplasty.
- 13. Bacterial biofilms.

ii) Clinical/Practical

Mandatory: Dissection of head and neck 10 temporal bone dissections which include:

- 1. Cortical mastoidectomy
- 2. MRM & radical mastoidectomy
- 3. Facial nerve decompression
- 4. Posterior tympanotomy
- 5. Labyrinthectomy
- 6. Endolymphatic sac decompression
- 7. Translabyrinthine approach to IAM
- iii) Essential list of surgical proceduresFollowing procedures are classified as :
- a) To be perfored independently (PI)
- b) To assist a senior specialist / consultant (PA)
- c) To observe the procedure (O)

Otology

To be done independently (PI).

Cortical mastoidectomy - 5 cases

MRM / radical mastoidectomy- 2 cases

Myringoplasty – 3 cases

- Myringotomy and grommet insertion 3 cases
- To assist/observe a senior specialist / consultant (PA)

Ossiculoplasty-1 case

Facial nerve decompression

Stapedectomy (PA/O)

1. Rhinology

To be done independently (PI)

- Reduction of fracture nasal bones 2 cases
- SMR 7 cases
- Septoplasty 5 cases
- Diagnostic nasal endoscopy 10 cases
- FESS a) Uncinectomy –1 case
 - b) Polypectomy 2 cases
 - c) Anterior ethmoidal cell clearance -1 case
 - d) Middle meatal antrostomy -1 case
- Caldwell Luc 1 case
- Antral lavage 5 cases
- Intranasal antrostomy –2 cases
 - b& c) To assist or observe:
- FESS Posterior ethmoid / sphenoid ./ frontal sinus surgery
- Endoscopic Dacrocystorhinostomy.
- Maxillo facial surgeries
- External operations of frontoethmoid sinus
- Maxillectomy Total
- Partial
- 2. Laryngology, Head and Neck

To be done independently (PI)

- Tracheostomy 2 cases
- Tonsillectomy 10 cases

- Adenoidectomy 5 cases
- Direct laryngoscopy 10 cases
- Oesophagoscopy / foreign body removal from larynx, bronchus &oesophagus – 5 cases

b/c)To assist or observe

- Bronchoscopy
- Total / Partial laryngectomy
- Block dissections of the neck
 - c/d) To wash and observe a senior (O)
- Thyroid surgery
- Salivary gland surgery
- Microlaryngeal surgery
- Clearance of Post Ethmoids and Sphenoid.
- Orbital Decompression
- Optic Nerve Decompression.

IV. TEACHING AND LEARNING ACTIVITIES:

A) Theoretical Teaching:

- **1. Lectures:** Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.
- 2. Journal Club: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the log book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.
- 3. Subject Seminar: Recommended to be held once a week. All the PG 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 timetable for the subject with names of the students and the moderator should be announced in advance.

- 4. **Case Discussion:** Recommended to be held once a week. All the PG 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 timetable for the case presentation with names of the students should be announced in advance.
- 5. Ward Rounds: Ward rounds may be service or teaching rounds.
 - a) Service Rounds: Postgraduate students should do service rounds every day for the care of the patients. Newly admitted patients should be worked up by the post graduate student and presented to the faculty members the following day.
 - b) Teaching Rounds: Each unit should have 'grand rounds' for teaching purposeat the bed side. A diary should be maintained for day-to-day activities by the postgraduate students.

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

- 6. Clinico-Pathological Conference: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 CPCs.
- 7. Inter departmental Meetings: Strongly recommended particularly with departments of Oncology or Radio-diagnosis at least once a month. These meetings should be attended by postgraduate students and relevant entries must be made in the log book.

Oncology: Interesting cases shall be chosen and presented by the post-graduate students and discussed by them as well as the senior staff of Oncology department. The staff of Oncology department would then show the slides and present final diagnosis. In these sessions the advanced immunohistochemical techniques, the burgeoning markers, other recent developments can be discussed.

Radio-diagnosis: Interesting cases and the imaging modalities should be discussed. Emphasis should be given for the radiological differential diagnosis.

- 8. Teaching Skills: Postgraduate students must teach under graduate students (eg. medical, nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. Assessment is made using a checklist by faculty as well as by the students. Record of their participation is to be kept in log book. Training of postgraduate students in Educational Science and Technology is recommended.
- **9. Continuing Medical Education Programmes (CME):** Recommended that at least 2 state level CME programmes should be attended by each student during the course.
- **10. Conferences:** Attending conference is compulsory. Postgraduate student should attend minimum one national and one state level conference during the course.
- **11. Research Activities:**The Postgraduate students to be encouraged to carry out research activities in the department, institution and or community.
- **B)** Clinical / Practical Training:

1. Rotational Postings in other Departments:

Neurosurgery	4 weeks
Plastic Surgery	4 weeks
Head & Neck Oncology	4 weeks
Speech & Hearing	2 weeks
Anesthesiology	2 weeks

V. OTHER CRITERIA TO BEFULFILLED FOR THE DEGREE COURSE:

1. Internal evaluation:

During the course of three years, the department will conduct three tests, one each at the end of first, second & third year. The third test will be a preliminary examination which may be held three months before the final examination. The test may include the written papers, practicals / clinicals and viva-voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the University when called for.

Results of all evaluations should be entered into P.G's log book / diary and departmental file for documentation purposes. Main purpose of periodic examination

and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a log book/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. All the procedures performed by the post graduate students should be entered in the log book. All the daily activities including the ward rounds and the routine procedures preformed on day to day basis should be entered in the log book and it should be verified and signed by the faculty member. The log book shall be scrutinized and certified by the head of the department and head of the Institution, and presented during the University practical/clinical examination.

3. Dissertation

Every candidate pursuing MD 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.

For details regarding DISSERTATION Refer 9.1 to 9.11 of Chapter-I.

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory, and dissertation is accepted.

A) Theory :400 Marks

There shall be four papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No. of	Marks for each question	Total Marks
	Questions		
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper I :	Basic Sciences -	-100 marks
	1. Anatomy	
	2. Physiology	
	3. Other basic science topics covered in syllabus	
Paper II:	Otology including recent advances	-100 marks
Paper III:	Rhinology including recent advances	-100 marks
Paper IV:	Pharyngolaryngology& Broncho-oesophagology including recent advances	-100 marks

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

B. Clinical / Practical Examination: 400 Marks

To elicit competence in clinical skills and to discuss differential diagnostic / therapeutic aspects.

Types of Cases	No. of Cases	Marks
Long Case	1	100
Short cases	3 (50 marks each)	150
Case-Ward Rounds	2 (25 marks each)	50
Total	6	300

C. Viva- Voce Examination: 100 Marks

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills.

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 given case reports, spirometry, ABG, gross specimens, histo-pathology slides, X-rays, ultrasound, CT scan images, PFT report, ventilation-perfusion scan images etc., for interpretation and questions on these as well as use of instruments will asked. Student's knowledge on use of instruments and drugs pertaining to the respiratory system will also be evaluated during viva-voce examination. It includes discussion on dissertation also.

- 2) Pedagogy Exercise + Log book (20 marks)
 - i) Candidate is asked to make a presentation for 8 -10 minutes on topic given in the beginning of clinical examination 10 marks
 - ii) Candidate is asked to make a presentation for 8 -10 minutes on the dissertation topic and review of log book. 10 marks

D. Maximum Marks:

Maximum marks for	Theory	Practical	Viva	Grand Total
Degree M.S. in				
Otorhinolaryngology	400	300	100	800
and Head & Neck Surgery				

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

SI.	Name of the Textbook	Authors	Publisher
No.			
1.	Scott Brown's Otorhinolaryngology & Head and Neck Surgery (3vols) VII edition,	Michael Gleeson & others	Hodder Arnold
2.	Cummings Otolaryngology , Head and Neck Surgery 5 volumes	Charles W Cummings, Paul WF lint, Lee A Harker, BrueeHaugh ley, Mark A Richardson, K. Thomas Robbins, David E Schuller, J Regan Thomas	Elsevier, Mosby
3.	Rob and Smith Operative Surgery Ear, Nose and Throat, Head &Neck	Hugh , David cartere, RCG Rassel	Butterworth's
4.	Paperella Otolaryngology 4 Vol set	Paparella, Shumrick, Allan, Meyerhoff	W.B. Saunders
5.	Logan Turner's Diseases of the Nose, Throat and Ear	A.G.D. Maran	Butterworth Heinemann Ltd.
6.	An Atlas of Head and Neck Surgery	Lore	W.B. Saunders
7.	Glasscock – Shambaugh Surgery of the Ear	Michael Glasscock III , Aina Julianna Gulya	BC Deker Inc. Elsevier
8.	Ballenger Snow Jr. Otorhinolaryngology, Head and Neck Surgery	John Jacob Ballenger James B. Snow	Lippincott Williams & Wilkins

9.	Head and Neck Oncology	Jatin P Shah Snehal G Patil	Mosby
10.	Surgery of the Cancer of the Larynx	Carl. E Silver	W.B. Saunders Company
11.	Head and Neck Surgery	John C Watkinson Mark N Gaze Janet A Wilson	Butterworth Heinemann
12.	Phonosurgery	Harvey M Tucker	Churchill Livingstone
13	Paediatric Otolaryngology	Charles F Ferguson Edwin L Kendig	W.B. Saunders
14.	Temporal bone Dissection Anatomy of Temporal Bone	Barry J Anson James A Donaldson	W.B. Saunders
15.	Learing Ear by Temporal bone dissection	Dr. K.K. Ramalingam Dr. Sreerammurthy B	Chinnamal ENT Medical Education and Research Foundation
16.	Clinical Audio/Vestibulometry	Anirban Biswas	Bhalani Publication House Mumbai
17.	Surgical Technique of the temporal bone and skull base	Silverstain H Rosenber	Lea Febiger
18.	Microsurgery of the skull base	U. Fisch Mattox D	George Thiemeverlag
19.	Functional Endoscope Sinus Surgery	Stammberger H	B.C. Decker INC publisher
20.	Controversies of ENT/Otolaryangology		
21.	Recent Advances in Otolaryangology	Lalwani&Pfister	Jaypee Brothers-2012

VIII. RECOMMENDED JOURNALS:

SI. No.	Name of the Journal
1	The Laryngoscope – Lippincott Williams & Wilkins
2	Indian Journal of Otolaryngology and Head & Neck Surgery –
	Springer
3	Annals of Otology, Rhinology& Laryngology – Annals
	publishing Co.
4	Archives of Otorhinolaryngology – American Medical
	Association
5	Journal of Laryngology & Otology - UK Cambridge University
	press
6	Indian Journal of Otology Dr. M.K. Taneja , Mujafarnagar
7	Recent advances in Otorhinolaryngology – Mosby
8	The Otolaryngology clinics of North America – W B Saunders
	Company
9	Clinical Otolaryngology & Allied Sciences.