PROGRAM
MD ANAESTHESIOLOGY

(Revised with effect from 2019-2020 onwards)

Courses:

Paper 1 : Basic science as applicable to anaesthesia. (U15MDAN01)

CO1: Knowledge of Anatomy, physiology and pharmacology necessary in the practice of anaesthesiology.

CO2: Understanding of the Physics involved in the function of equipment used in Anaesthesia.

CO3: Knowledge of biochemistry involved in anaesthesia.

CO4: Understanding the Patho Physiology of diseases which can increase risk during anaesthesia.

CO5: History of development of anaesthesia.

CO6: Competency in the use of the equipments used in anaesthesia.

Anatomy :

Special emphasis for the dissection of larynx, heart, various nerves and plexus.

Physiology :

Thorough revision of all the system, in particular Cardio Vascular System, and Respiratory system.

Pharmacology :

Of **drugs used in Anaesthesia and drugs used for management of systemic disease and drug interactions**

Allied Speciality:

Students should be posted ICU, ICCU, SICU (Trauma unit) and pain clinic during 2nd year of training of 2 weeks in each, for total duration of 2 months.

Paper II : Clinical Practice of Anaesthesia (U15MDAN02)

CO1: Knowledge of cardio vascular system and respiratory system necessary in the practice of anaesthesiology.

CO2: Knowledge of Neuro surgery, Obstetrics and Gynaecology, Orthopaedics and Opthalmology

Pre anaesthetic evaluation and preparation

Principles and practice of Anaesthesiology including pre per and post operative care, of patients belonging to General Surgery and other sub specialties like Cardiothoracic Surgery, Neurosurgery, Orthopaedics, Plastic Surgery, Ophthalmology, Laproscopy Surgery, transplant etc..

Paper III : Clinical practice of anesthesia (U15MDAN03)

CO1: Knowledge of the specialties of paediatrics, geriatrics, ENT.

CO2: Knowledge of Renal & Hepatic system, Endocrines and Haemopoietic system.

CO3: Competency in Out patient anaesthesia & dental anaesthesia

CO4: Competency to administer Nerve Blocks

Principles and practice of Anaesthesiology including pre per and post operative care, of patients belonging to Surgical Endocrinology, Surgical Oncology, Paediatrics, ENT, Ophthalmology, Urology, Dental Surgery, Laproscopy Surgery, transplant etc , and competency in performing nerve blocks

Competency in giving epidural analgesia in second stage of labour

Dental anesthesia

Anesthesia in pediatrics

Paper IV : Applied medicine in relation to anaesthesia (U15MDAN04)

CO1: Knowledge in the theoretical aspects of pain.

CO2: Competency in pain relief, in the post operative period.

CO3: Competency to manage cancer pain.

Competency in Pain clinic organization and management, Pain pathway and management of pain mainly cancer pain and also during post operative period

Soft Skills (MDAN5**) – Elective Course**

CO1: The ability to practice the specialty in an ethical manner.

CO2: The ability to work as a member/leader of a healthcare team.

CO3: Teaching abilities.

CO4: Attitude to be a lifelong learner.

Values such as the adoption of ethical principles, professional honesty and integrity would be inculcated in the student during the training. These include, but is not limited to a) Communication skills with patients, caregivers and colleagues b) Attitude to be a lifelong learner c) Competency to be a good teacher & d) Ability to work as the member of a team. These will be assessed by 360 degree evaluation.

Year wise structured training schedule

First year :

1. Basic sciences related to Anaesthesiology, Theoretical knowledge, frequent visits to Anatomy dissection halls and Museum, Physiology Laboratories etc. to revise the relevant subjects.
2. Theoretical knowledge of Anaesthesiology & Resuscitation : Special emphasis on clinical examination of patients, learning clinical methods, arriving at correct diagnosis.
3. Basic knowledge about :
    a. Computers in anesthesia, medicine, internet
    b. Bio statistics
    c. Medical audit
    d. Medico legal aspects
    e. Research Methodology
    f. Evidence based medicine
    g. Medical ethics, social responsibilities of anaesthesiogists
4. Learning of communications skills
5. Anaesthesia skills
    a. Pre anaesthetic evaluation/under supervision
    b. Monitoring of patients through out peri operative period
    c. Management of Spinal Headache
    d. Assisting setting up of Anaesthesia machine, Monitor & Ventilator
    e. Assisting the conduct of anaesthesia for major surgeries, knowledge about the complications of anaesthesia
    f. Assisting for short anaesthesia initially and later on doing independently under supervision
    g. Conduct of anaesthesia OPD
    h. Conduct of Pre Anesthesia Clinic
    i. CPR training and mastering of BLS & ACLS
    j. Anesthesia in Geriatric Age group

6. 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, sub specialities of anaesthesia, assisting senior anesthesiologists in specialised branches like paedatric surgery, cardiothoracic surgery, critical care trauma etc.
2. Anaesthetic skills : At the end of 2nd year the student should be capable of :
   a. Anaesthetising 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 & 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 review, interaction with guide. Organization of the date writing up of the manuscript of dissertation at the end of 2nd year.
5. the student should be actively involved in presentation of seminars, journal clubs, case presentations/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 1 and ii year students. The third year students should also involve in teaching undergraduate students specially bed side clinics.
4. Dissertation : The completed dissertation must be submitted to the University, 6 months before the examination before the notified date.
5. The student must get expertise in the specialised procedures as noted in the course content table.

Monitoring Progress of studies

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 monotoring be done by the staff of the department based on participation of students in various teaching/learning

activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in chapter IV.

The learning out comes to be assessed should include:

1. Personal attitudes
2. Acquisition of knowledge
3. Clinical ad operative skills and
4. Dissertation
5. Teaching skills

1. Personal attitudes:

The essential items are:

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

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

2. Acquisition of knowledge :

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

Journal review meeting (journal club) : The ability to do literature search, in depth study, presentation skills, and use of audio-visual aids are to be assessed.

The assessment is make by faculty members and peers attending the meeting using checklist (see model checklist –1, Chapter IV)

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 to be assessed using a checklist (see model checklist – II, Chapter IV)

Clinico-pathological conferences : This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenters are to be assessed using a check list similar to that used for seminar.

3. 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, Chapter IV)

Clinical meetings : Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see model checklist IV, chapter IV)

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)

4. Teaching skills

Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (see mild checklist V, chapter IV)

5. Dissertation in the Department

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

6. 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.

7. Periodic tests

The departments may conduct three tests, two of them be annual tests, one at the end of the 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/clinical and viva vice.

8. Records

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

Log Book

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

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

Procedure for defaulters :

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

Scheme of Examination

A) Written examination shall consist of four question papers each of three hours duration. Each paper shall consist of two long questions carrying 20 marks each

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

Paper 1 : Basic science as applicable to anaesthesia. (U15MDAN01)

- Anatomy
- Physiology
- Pharmacology
- Physics
- Biochemistry
- Patho Physiology
- History
- Equipments

Paper II : Clinical Practice of Anaesthesia (U15MDAN02)

- Cardio vascular system
- Respiratory system
- Neuro surgery
- Obstetrics and Gynaecology
- Orthopaedics
- Opthalmology

Paper III : Clinical practice of anesthesia (U15MDAN03)

- Paediatrics
- Renal & Hepatic system
- Endocrines
- Haemopolitics
- Geriatrics
- ENT
- Out patient anaesthesia & dental anaesthesia
- Nerve Blocks

Paper IV : applied medicine in relation to anaesthesia (U15MDAN04)

Theoretical aspects of pain and pain relief including post operative and cancer pain

B) Clinical examinations : (200 marks)

It should aim at examining clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate should examine

and present atleast one long case (carrying 100 marks) and two short cases (each carrying 50 marks). The total marks for clinical examination shall be 200.

C) Viva Voce : (100 marks)

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

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 the candidate may also be given, instruments/equipments, x-ray images, ABG reports, ECG strips, Drugs Ultrasound/Echocardiography reports and specimen. It includes discussion on dissertation also.

ii. For teaching skills (Pedagogy)..... 20 marks

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

Maximum marks for	**Theory**	**Practical**	**Viva**	**Grand total**
MD Anaesthesiology	400	200	100	700

Recommended Books & Journals

1. Practice of Anaesthesiology – Wylie – Churchill-Davidson
2. General Anaesthesia – Gray, Nunn, Utting
3. International practice of anaesthesia 2 volumes – Prys-Roberts
4. Anaesthesia – two volumes, Ronald.D.Miller
5. Clinical Anesthesia- Barash, Cullen, Stoelting
6. Anatomy for Anaesthetist – Harold Willis
7. Essential anatomy for anesthesia – Black/Chambers
8. Understanding Anaesthetist equipments – Dorsh & Dorsh
9. Emergency anaesthesia – Thronton
10. Principles of Obstetric Anaesthesia – J.S.Crawford
11. Obstetric anaesthesia – Principles and practice – David H. Chestnut

12. Physics for anaesthetist – Mushin & Jones
13. Neuro surgical anaesthesia – Hunter
14. Anesthesia and Neurosurgery – Cottrell
15. Clinical neuro anesthesia - Cucchiara
16. Paediatric anaesthesia – Gregory
17. Cardiac Anaesthesia 2 volumes – Kaplan
18. Anaesthesia and co existing diseases – Stoelting
19. Anaesthesia equipment – Ehrenwerth and James.B.Eisonkraft
20. Text book of anaesthesia – Atkenhead, Rowbatham, Smith
21. Smith's Anaesthesia for infants and children – Etsuro K Motoyama
22. Obstetrics anaesthesia and uncommon disorders – Gambling and Douglas
23. Textbook of pain – Wall/Melzack
24. Bonica's management of pain
25. Textbook of regional anesthesia- Raj
26. Clinical anaesthesiology- Morgan
27. Anaesthesia for Orthopaedic surgery
28. Principles of Critical Care – Schmidt/Wood
29. Intensive Care Medicine – Irwin, Cerra, Rippe
30. The ICU book – Marino
31. Mechanical Ventilation – Macintytre/Branson
32. Neural blockade in Clinical Anesthesia and management of pain- Michael J Cousins
33. Thoracic anaesthesia – Jonathan L. Benumof
34. Drugs interactions and other basic medical science and anaesthesia speciality books as available

Journals

1. Anaesthesia and analgesia journal
2. Anaesthesiology journal
3. Anaesthesia journal
4. Acta Anaesthesia Scandinavia
5. Canadian journal of anaesthesia
6. Indian journal of anaesthesia
7. Expert anaesthesia
8. British Journal of anaesthesia
9. Recent advances in anaesthesiology
10. Year book of anaesthesia
11. Anaesthesia clinics
12. Clinics of North America in Anaesthesiology