Program and Course Structure

School of Medical Science and Research

MD (Anesthesiology)
Session: 2020-23

1. Standard Structure of the Program at University Level

1.1 Vision, Mission and Core Values of the University

Vision of the University

To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.

Mission of the University

1. Transformative educational experience
2. Enrichment by educational initiatives that encourage global outlook
3. Develop research, support disruptive innovations and accelerate entrepreneurship
4. Seeking beyond boundaries

Core Values

- Integrity
- Leadership
- Diversity
- Community

Vision of the School

To serve the society by being a premier institute that promotes a comprehensive approach to human health through excellence inacademics, research and clinical care

Mission of the School

- Provide a transformative educational experience in Medical Science
- Develop skills and competencies to create global leaders in clinical care
- Promote innovative and collaborative research through intellectual and technological advancement
- Establish a center for excellence in preventive, promotive and curative health care

Core Values

- Integrity
- Leadership
- Ethics
- Community Health

1.3 Programme Educational Objectives (PEO)

1.3.1 Writing Programme Educational Objectives (PEO)

A post graduate student having qualified the MD (Anaesthesiology) examination should be able to:

PEO1. Understand, learn and practice the anaesthetic management of patients undergoing surgeries in various specialties and super specialties and other extraordinary situations.
PEO2. Understand, learn and practice the management of acute and chronic pain including acute pain services and labor analgesia.
PEO3. Understand, learn and practice management of patients in intensive care units, patients requiring cardiopulmonary resuscitation.
PEO4. Understand general principles of medical education (use appropriate teaching techniques and resources). Able to teach medical interns and paramedical staffs about various aspects of perioperative and intensive care management.
PEO5. Interpret and evaluate research publications critically.
PEO6. Use the library facilities, skill lab, wet lab (Literature database using computer, CD ROM, internet search, manikins, simulators including computer based simulators, animal and cadaveric demonstration and any other available newer techniques).
PEO7. Discussion and presentation of case reports, unusual events and conduct clinical research towards thesis completion, learn various aspects of biostatistics including compilation and publication of thesis.
PEO8. Have acquired skills in effectively communicating with the students and colleagues from various medical and paramedical fields.
PEO9. Acquire skills in conducting collaborative research in the field of anaesthesiology, pain and intensive care medicine with allied sciences, clinical sciences and biomedical engineering.
PEO10. Interact with the blood bank in understanding perioperative transfusion medicine and procuring various blood products.
PEO11. Serve as interface with society at large.
PEO12. Acquire administrative skills to set up concerned department, pain clinic, intensive care unit and skills regarding departmental procurement and audit procedures.
PEO13. Function as a member of a clinical, teaching and research team.

1.3.2 Map PEOs with Mission Statements:

PEO Statements	School Mission 1	School Mission 2	School Mission 3	School Mission 4
PEO1:	3	2	2	3
PEO2:	3	3	2	3
PEO3:	3	2	1	3
PEO4:	3	3	2	3
PEO5	3	3	3	3
PEO6	3	1	1	3
PEO7	3	3	3	3
PEO8	1	3	3	2
PEO9	3	3	3	3
PEO10	3	3	1	3
PEO11	3	3	“”	3
PEO12	3	3	“”	3
PEO13	3	3	2	3

1.3.3 Program Outcomes (PO's)

A. Cognitive Domain

PO1: Understand and implement, in daily practice, anatomical, physiological, pharmacological and clinical aspects of anaesthesia, pain management, intensive care medicine.

PO2 : Conduct such clinical research activities, as would have a significant bearing on human health and patient care in the field of anaesthesia, pain management and intensive care medicine .

PO3: Interact with other departments for a multidisciplinary approach to the issues as and when necessary.

PO4: Participate actively in various workshops/seminars/journal clubs/demonstration in the allied departments, to acquire various skills for collaborative research.

PO5: Contribute to society by improving public awareness of perioperative anaesthesia care, various pain management services

PO6: Plan a research study and conduct basic and clinical systemic investigations.

B Affective domain

PO7: Demonstrate self-awareness and personal development in routine conduct. (Self-awareness)

PO8: Communicate effectively with peers, students and teachers in various teaching-learning activities. (Communication)

PO9: Demonstrate due respect in handling patients (Ethics & Professionalism)

PO10: Acquire capacity of not letting his/her personal beliefs, prejudices and limitations come in the way of duty.

PO11: Appreciate the issues of equity and social accountability while exposing patients to anaesthesia, pain and intensive care management. (Equity and social accountability)

C**. Psychomotor Domain**

PO12: Pre-anaesthesia clinic, management of various regional anesthesia (subarachnoid, epidural, including caudal, nerve blocks) and general anaesthesia (various induction methods, intubation procedures, maintenance of anesthesia, reversal), post-anaesthesia care unit.

PO13: Various acute and chronic pain management services(assessment, intervention)

PO14: Acute resuscitation and management of patients (including trauma and mass casualties) in emergency and intensive care units

PO15: Clinical examinations pertinent to anaesthesia, pain management and intensive care units

PO16: Writing a dissertation and a research paper

PO17: Making presentations at conferences

PO18: Appropriately using various learning and teaching methods.

1.3.4 Mapping of Program Outcome Vs Program Educational Objectives

	PEO1	PEO2	PEO3	PEO4	PEO5	PEO6	PEO7	PEO8	PEO9	PEO10	PEO11	PEO12	PEO13
PO1	3	3	3	3	1	1	1	“”	“”	“”	“”	“”	“”
PO2	2	2	“”	1	3	1	3	“”	3	1	“”	1	3
PO3	2	2	1	3	1	“”	1	3	2	3	“”	1	2
PO4	1	2	3	3	3	2	2	3	3	“”	“”	1	3
PO5	3	3	3	3	“”	1	3	“”	3	“”	3	“”	3
PO6	3	2	1	1	3	3	3	2	3	“”	“”	“”	3
PO7	“”	2	3	“”	“”	1	“”	2	1	1	“”	“”	1
PO8	3	3	3	“”	“”	“”	“”	3	2	2	“”	2	1
PO9	2	3	“”	“”	“”	“”	“”	3	3	“”	2	“”	3
PO10	“”	3	3	2	“”	“”	“”	2	2	2	3	3	3
PO11	“”	3	3	“”	“”	“”	“”	2	3	3	3	3	3
PO12	3	2	“”	3	1	“”	“”	“”	“”	“”	“”	“”	“”
PO13	3	3	“”	3	1	“”	“”	“”	“”	“”	“”	“”	“”
PO14	3	3	“”	3	1	“”	“”	“”	“”	“”	“”	“”	“”
PO15	3	3	“”	3	1	“”	“”	“”	“”	“”	“”	“”	“”
PO16	“”	3	“”	“”	3	3	3	“”	3	3	“”	“”	3
PO17	“”	3	“”	“”	3	3	3	2	3	3	“”	2	3
PO18	3	3	3	“”	3	2	“”	3	“”	“”	“”	“”	1

School: SMSR		**Batch:**
Program: MD Anesthesia		**Current Academic Year: 2019-20**
1	Programme Code	SMS0901

Syllabus

Course contents:

Paper-I: General and Cellular Physiology including Genetic Basis and Historical perspectives:

1. Physiology of cell, various cellular mechanisms and genetic control mechanisms.
2. Various principles of Physics and Physical Chemistry involved in physiological phenomenon e.g. haemo-dynamics, bio-electrical potentials, body fluids, methods of measurements.
3. History of Physiology.
4. Biostatistics, Biophysics, Biochemistry, Micro-anatomy.
5. Growth and Development including aging.
6. Excretion, pH, water and Electrolyte balance.

Paper-II: Systemic Physiology (system providing transport, nutrition and energy) including comparative Physiology.

1. Blood and Immunity.
2. Cardiovascular System.
3. Respiratory System.
4. Gastro- Intestinal Tract (GIT) and dietary requirements.

Paper-III:Systemic Physiology (system concerned with procreation, regulation andneural control)

1. Nerve-Muscle Physiology including muscle mechanics
2. Endocrine Physiology
3. Nervous System (Central, peripheral and autonomic)
4. Special Senses
5. Reproduction & family planning/foetal & neonatal Physiology

Paper-IV: Applied Physiology including recent advances

1. Patho-physiology pertaining to systemic Physiology
2. Physiological basis of various clinical investigation tests
3. Interaction of human body in ambient environment- high altitude, space anddeep sea
4. Sports physiology
5. Yoga and Meditation
6. Recent advances relevant to Physiology
7. Social responsibilities of physiologists

FORMATIVE ASSESSMENT:

Formative assessment should be continual and should assess medical knowledge, procedural & academic skills, interpersonal skills, professionalism, self directed learning and ability to practice in the system.

During the three year training period,

A record of all theoretical, practical and experimental work done by the post graduate student and its assessment will be kept and shall be available for examiners at the time of the final practical and viva voce examination and

There will be periodical examinations during the course of training. The prefinal theory and practical examination will be conducted by the faculty of the 11 concerned college. During last six months the post graduate student will have weekly assessment tutorials conducted by the faculty. All activities will be evaluated.

General Principles

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and practical/clinical examination.

Quarterly assessment during the MD training should be based on:

1. Journal based / recent advances learning
2. Patient based /Laboratory or Skill based learning
3. Self directed learning and teaching
4. Departmental and interdepartmental learning activity
5. External and Outreach Activities / CMEs

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT:

The summative examination would be carried out as per the Rules given in POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.

The Post Graduate examination will be in three parts:

1. **Thesis**:

   Every post graduate student shall carry out work on an assigned research project under the guidance of a recognised Post Graduate Teacher, the result of which shall be written up and submitted in the form of a Thesis. Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing

the post graduate student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature. Thesis shall be submitted at least six months before the Theory and Clinical / Practical examination. The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical examination. A post graduate student shall be allowed to appear for the Theory 12 and Practical/Clinical examination only after the acceptance of the Thesis by the examiners.

2. **Theory**

The examinations shall be organised on the basis of 'Grading'or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination for M.D./ MS shall be held at the end of 3rd academic year. An academic term shall mean six month's training period.

Theory consists of four papers of 3 hours each having 10 short structured questions with 10 marks each:

Paper I: Basic Sciences as applied to Anaesthesiology

Paper II: Practice of Anaesthesia: Anaesthesia in relation to associated systemic and medical diseases.

Paper III: Anaesthesia in relation to subspecialties/superspecialties

Paper IV: Intensive Care Medicine, Pain Medicine and Recent advances.

3. **Practical/Clinical Examination: Will consist of: 3 clinical cases,**

- Long case: One, duration 30 min (history, examination, Diagnosis and Management, Discussion)
- Short cases: Two, 15 minutes each for short case. In short cases only relevant history important to anaesthesia to be taken (history, clinical examination and diagnosis, discussion).

Oral/Viva-voce should be conducted preferably on four tables with one examiner on each table:

- Table one: ECG, X-rays, ABG Cards, Pulmonary function tests, Capnographs, clinical exercises card.
- Table two: Anaesthetic Drugs, Emergency Drugs, IV Fluids, Nerve Bocks (skeleton)
- Table three: Anaesthesia machine including circuits and Vaporizers, ETT, Supraglottic Airway devices, ICU Ventilator and oxygen therapy equipment.
- Table four: Resuscitation equipments, resuscitation demonstration, Difficult Airway Equipment, monitoring equipments.

Alternatively

1. One long case, viva voce at one station with all examiners, and : 150 marks
2. 28 OSCE station covering two stations of short cases, drugs ECG, X-rays, PFT, ABG, Respiratory loops, Resuscitation etc.,: 150 marks

Recommended Reading

Books (latest edition)

1. Lee's Synopsis of Anaesthesia
2. Clinical Anesthesiology by Morgan
3. Cardiac Anaesthesia By Joel Kaplan
4. Clinical Anaesthesia by Barash, Cullen and Stoelting
5. Textbook of Anaesthesia by Aitkenhead Rowbotham and Smith
6. Anaesthesia for neonates and infants by Smith
7. Pharmacology and Physiology for Anaesthetists by Stoelting
8. Principles of Obstetric Anaesthesia by Craford
9. Miller's Anesthesia
10. Stoelting RK, Miller RD Basics of Anaesthesia
11. ICU Book, Paul Marino
12. Text Book of Critical Care, by Fink et al
13. Regional Anaesthesia, P Prithviraj
14. Practical Management of Pain, Raj
15. Stoelting and Dierdorf: Anaesthesia and Co-existing Disease
16. Dorsch and Dorsch: Understanding Anaesthesia Equipments
17. ECG by Shamroth/Goldman
18. Anatomy for Anaesthetists by Harold Ellis

19. Clinical Anesthesia by P.G.Barash

20. Longneckers Anaesthesiology- Mcgraw Hill

Must refer:

1. Cucchiara and Michenfelder: Clinical Neuroanaesthesia
2. Cottrell and Smith: Anaesthesia and Neurosurgery
3. Complications in Anaesthesiology by Orkin
4. Complications in Anaesthesia by Raven
5. Airway management by JL Benumof
6. Obstetric Anaesthesia by Chestnut Journals 03-05 international

Journals and 02 national (all indexed) journals

Annexure I

Postgraduate Students Appraisal Form Pre / Para /Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student :

Period of Training : FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory	Satisfactory	More Than Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1	Journal based / recent advances learning				
2	. Patient based /Laboratory or Skill based learning				
3	Self directed learning and				

	teaching				
4	Departmental and interdepartmental learning activity				
5	External and Outreach Activities /				
6	CMEs				
7	Thesis / Research work				
8	Log Book Maintenance				

Publications **Yes/ No**

Remarks*_____

_____

_____ _____

*REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE SIGNATURE OF CONSULTANT SIGNATURE OF HOD