REGULATIONS AND CURRICULUM GOVERNING

M.Sc. ANAESTHESIA & OPERATION THEATRE TECHNOLOGY PROGRAM

Implemented in Academic Year 2020-21

Amended up to 2025

Name of the Constituent Unit: Yenepoya School of Allied Health Sciences



YENEPOYA
(DEEMED TO BE UNIVERSITY)

Deralakatte, Mangalore, Karnataka.

YENEPOYA
(DEEMED TO BE UNIVERSITY)

NOTIFICATION FROM THE UNIVERSITY

Sl. No.	ACM with date	BOM/BOS with date	Decisions/Approvals
1.	39th ACM/ 27.08.2020	50th BOM/ 28.8.2020	Starting of M.Sc. Anaesthesia & OT Technology under the Faculty of Allied and Healthcare Professions and approval of curriculum & regulations
2.	43rd ACM/ 07.07.2021	54th BOM/ 08.07.2021	Approved the introduction of the Choice Based Credit System (CBCS) for the M.Sc. Anaesthesia & OT Technology programme.
3.	51st ACM/ 16.05.2023	62nd BOM/ 14.06.2023	Approval of CBCS regulations: Form CIA 40% and SEE 60% to CIA 50% and SEE 50%. Minimum pass marks for CIA shall be 50% and SEE shall be 50%
4.	58th ACM/ 13.08.2024	4th Executive council/ 10.09.2024	Approved the amendment of the dissertation credit distribution from 6 credits to 12 credits.
5.	63rd ACM/ 13.05.2025	8th Executive council/ 10.06.2025	Approved the amendment on Structured continuous internal assessment components of PG dissertation

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1. Preamble

Health care sector has become one of the largest employment generation sectors in India and abroad. Rapidly changing and expanding horizon of the health care sector demands formal training programs in all its Allied areas. Postgraduate Program in Allied Health sciences speciality often encompasses a wide range of disciplines. The learning during post-graduation is usually heavily research focused. Professionals in the medical field rely heavily on modern technology to successfully treat, diagnose, and care for patients. By doing post-graduation in Allied health disciplines one will be preparing for a career as an educator, researcher, or technologist. Students may find a variety of options upon completion of post-graduation such as managing the Laboratories, Operation theatres, Radiology suites and Dialysis units. They can also join as teachers in the faculty of Allied and health professionals. They can also do research pursue doctorate in their field of interest. They can also join biomedical equipment manufacturing company and pharmaceutical company as experts in their field.

M.Sc. in Anaesthesia & OT Technology is a post graduate course in science aimed at learning how to scientifically manage the operation theatre, arrange equipment, monitor and drugs for the safe conduct of Surgery and assist the anaesthesiologist in conduct of anaesthesia.

Post graduate technologists can be the operation theatre manager or take up teaching, research or work as application specialist. They can also be the OT technologist, clinical supervisor and even clinical research consultant. Operation theatre has many biomedical equipment and pipelines, hence thorough knowledge of this will help in finding employment opportunities in the biomedical company or in biomedical team managing the operation theatre Professionals may eventually specialize in specific fields such as cardiothoracic, pediatric or any other advanced sub specialties. There is a scope to get fellowship or PhD after post-graduation.

In accordance with this to match our education system with the international educational pattern we are introducing Choice Based Credit System from the academic year 2021 onwards

2. Definitions

2.1 Academic Year:

Two consecutive (one odd + one even) semesters constitute one academic year.

2.2 Choice Based Credit System:

The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).

2.3 Course:

Usually referred to, as 'papers' is a component of a programme. The courses shall define learning objectives and learning outcomes. A course shall comprise lectures/ tutorials/ laboratory work/ field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.

2.4 Credits:

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/tutorial laboratory work and other forms of learning required, to complete the course contents minimum of 15- w e e k schedule: One credit =1hour of lecture per week/ two hours of Laboratory or practical/three hours of clinical rotation, field work/posting. All courses need not carry the same credits

2.5 Programs:

An educational program leading to award of a degree, diploma or certificate.

2.6 Grade Point:

It is a numerical weight allotted to each letter grade on a 10-point scale.

2.7 Credit Point:

It is the product of grade point and number of credits for a course.

2.8 Cumulative Grade Point Average (CGPA):

It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.

2.9 Letter Grade:

It is an index of the performance of students in a said course. Grades are denoted by letters: O +, O, A+, A, B+, P, F.

2.10 Semester Grade Point Average (SGPA):

It is a measure of performance of work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.

2.11 Transcript or Grade Card or Certificate:

Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (code, title, number of credits, grade secured) along with SGPA of that semester.

Type of Courses

2.12. Core course:

A course that should compulsorily be studied by a candidate as a core requirement is termed as a core course. This is the core requirement to complete the M.Sc. Renal Dialysis Technology Program.

2.13 Skill Enhancement Course:

These courses are aimed at improving practical, professional & procedural knowledge requirement for carrying the highly skilled task related to the field of study.

12.14. Multidisciplinary Elective:

Generally, a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/subject of study or which provides an extended scope or which enables an exposure to some other discipline or subject or domain or nurtures the candidate's proficiency skill.

A candidate shall have the freedom to choose Multidisciplinary Elective courses during the academic duration of the particular PG Program offered by Yenepoya (deemed to be) University through the PG departments or SWAYAM/MOOC external online platforms or a mix of courses offered by Yenepoya(deemed to be) University and SWAYAM/MOOC as appropriate.

i. A candidate opting for SWAYAM/MOOC courses shall have the freedom to choose the courses of once own choice and complete such courses before appearing fourth Semester End Examination.

ii. A candidate shall compulsorily submit the pass certificate of each course successfully completed to the controller of examination of Yenepoya (deemed to be) University through the proper channel before appearing the fourth semester end examination.

iii. A candidate opting multidisciplinary elective courses offered by the Yenepoya (deemed to be) University through the PG departments need to take up these courses generally during second and third semesters of the program.

iv. A candidate shall not take the courses offered by the department in which she/he is enrolled.

v. Registration for the multidisciplinary elective courses offered by the Yenepoya (deemed to be) University shall be at least one week prior to the commencement of the course with the CBCS coordinator. The CBCS unit shall notify the list of courses after being approved by the respective BOS. For SWAYAM/MOOC courses shall be as per the enrollment notification by the respective implementation authorities.

Yenepoya (deemed to be) University shall adapt the regulations of UGC governing SWAYAM/MOOC courses as amended from time to time

3. Eligibility for Admission

Candidates who have passed B.Sc. Anaesthesia and Operation Theatre Technology (A&OTT), B.Sc. Anaesthesia Technology (AT) or B.Sc. Operation Theatre Technology (OT) degree from University established under law considered equivalent by thereto by Yenepoya (Deemed to be University). The candidate shall have obtained minimum of 50% aggregate of marks in all the years of University examination of degree course.

In case of SC/ST/OBC candidates the minimum marks shall be 45%.

4. Duration of the program

The duration of the programme shall extend over 4 semesters (2 academic years) of 15 weeks or more each with a minimum of 90 actual working days of instructions in each semester and 2 – 3 weeks of examinations. The successful completion will lead to Master's Degree in Anaesthesia and Operation Theatre Technology.

Semester:

An academic year shall consist of two semesters;

Odd Semester 1st& 3rd	September/October to February/March
Even semester 2nd& 4th	March/April to August/September

5. Maximum period for completion of the program

A Candidate shall complete the four semesters (two years) programme within four years from the date of admission.

6. Aim of the Program

To develop advanced-level Anaesthesia and Operation Theatre Technology professionals with in-depth theoretical knowledge, advanced clinical competence, and leadership skills in anaesthesia care, perioperative management, operation theatre administration, and critical care support. The program aims to prepare graduates capable of independently managing complex anaesthetic and surgical support services, ensuring patient safety, quality assurance, ethical practice, effective communication, interdisciplinary collaboration, research engagement, and lifelong professional development.

7. Outcomes of the program

- **Program Outcome (PO):** (Knowledge – K, Skill – S, Attitude – A, Communication – C)

  Objective of the program is to make the student learn about various types of Anaesthesia, Preparation of the Operation theatre for Anaesthesia and Surgery, Quality control in Operation theatres, working principles of Anaesthesia machine and its various components, workstation, monitoring equipment, ventilating equipment, Operation theatre equipment and accessories. They will also learn about troubleshooting when the equipment malfunctions.

  They will also learn about various surgical equipment, Different types of sterilization, maintaining the sterility in the Operation Theatre Environment.

  They will also learn about the Inventory count of the Operation theatre and Anaesthesia related items and to keep adequate stock for the posted surgical procedures.

  PO1: Teach and train students of the future in the same specialty. (K, S, A, C)

  PO2: Plan, setting up, maintaining and managing the Operation Theatre. (K, S, A, C)

  PO3: Discuss the pathophysiology of common conditions requiring surgery, medical interventions and intensive care management. (K, A, C)

  PO4: Operate equipments and monitors inside the operation theatre and also in the endoscopy suite, MRI suite and casualty. (K, S, A)

  PO5: Ability to identify and address treat the associated risk factors according to evidence based guidelines and be a member of the treating team. (K, S, A, C)

PO6: Understand the pharmacological effects, uses and adverse reactions of drugs, fluids and blood used in anaesthesia. (K, A)

PO7: Understand appropriate measures to protect self and the patient during patient transfer. (K, S, A, C)

PO8: Describe the application of technology to health care education and innovative strategies in teaching. (K, S, A, C)

PO9: Know various surgical procedures and requirements for these procedures. (K, S, A)

PO10: Apply statistical methods for research data, statistical analysis and reporting of study results. (K, S, A, C)

PO11: Understand and participate as manager of the health care system. (K, S, A, C)

PO12: Describe the anaesthetic and surgical requirements for different procedures. (K, S, A)

PO13: Work as member of rescue team and provide services such as Cardio PulmonaryResuscitation, Code Blue, etc. (K, S, A, C)

Program Structure:

	Broad category of course	**Hours / Credits**	**Course (Title)**
1.	**Discipline-Specific Courses**		
a.	Theory	**I Semester**	
		45 Hours / 3 Credits	Basic Sciences Related to Anaesthesiology
		45 Hours / 3 Credits	Anaesthesia Equipment
		45 Hours / 3 Credits	Biostatistics & Research Methodology
		II Semester	
		45 Hours / 3 Credits	Monitoring Equipment and Patient Monitoring
		45 Hours / 3 Credits	Operation Theatre Management and Sterilization

		45 Hours / 3 Credits	Applied Surgical Technology
		45 Hours / 3 Credits	Bioethics
		III Semester	
		45 Hours / 3 Credits	Sub Specialty Surgical Technique
		45 Hours / 3 Credits	Advanced Anaesthesia Technique
		45 Hours / 3 Credits	Health Care Management
		IV Semester	
		45 Hours / 3 Credits	Disaster Management
		45 Hours / 3 Credits	Sub Specialty Anaesthesia & Techniques
		45 Hours / 3 Credits	Anaesthesia & Critical Care
b.	Practical (SEC)*	**I Semester**	
		120 Hours / 4 Credits	Clinical Anaesthesia Management I (Practical I)
		II Semester	
		120 Hours / 4 Credits	Clinical Anaesthesia Management II (Practical I)
		III Semester	
		120 Hours / 4 Credits	Clinical Anaesthesia Management III (Practical I)
		IV Semester	
		120 Hours / 4 Credits	Clinical Anaesthesia Management IV (Practical I)
c.	Clinical (SEC)*	**I Semester**	
		240 Hours / 8 Credits	Clinical Anaesthesia Management I (Practical II)

		II Semester	
		120 Hours / 4 Credits	Clinical Anaesthesia Management II (Practical II)
		III Semester	
		180 Hours / 6 Credits	Clinical Anaesthesia Management III (Practical II)
		IV Semester	
		120 Hours / 4 Credits	Clinical Anaesthesia Management IV (Practical II)
2.	**Curriculum Enrichment Courses**		
a)	Research Project	12 Credits	Dissertation
1.	**Electives**		
a)	Interdisciplinary Courses	90 Hours / 6 Credits per year	Coursera/ Swayam
	Total	**95 Credits**	

8. Attendance

8.1 Each course (theory, practical, clinical etc.) shall be treated as an independent unit for the purpose of attendance. Candidates having minimum 80% attendance in each of the Courses can only qualify to appear for the Semester End Examination. The Candidates with less than 80% of attendance shall be required to repeat that Course by attending the semester.

8.2 There shall be no provision for condonation of the shortage of attendance.

8.3 For SWAYAM/MOOC/NPTEL it shall be as per the regulations governing the courses of implementing authority.

8.4 The HOD/Course Coordinator through the Dean of Faculties shall announce the names of the candidates who will not be eligible to take the Semester End-Examinations (SEE) in the various courses and send a copy of the same to the Controller of Examinations (COE) Office. Registrations of such candidates for those courses shall be treated as cancelled.

9. Teaching - Learning methods

Teaching - Learning method	Courses
Experiential learning	Clinical Anaesthesia Management I – IV Monitoring equipment and patient monitoring Operation Theatre Management and Sterilization Sub Specialty Anaesthesia & Techniques
Integrated/Inter-disciplinary learning	Bioethics Health Care Management Basic sciences related to Anaesthesiology Applied Surgical Technology Sub-specialty Surgical Technique
Participatory learning	Bioethics Heath Care Management Disaster Management
Problem-solving methodologies	Biostatistics & Research Methodology Anaesthesia Equipment Monitoring equipment and patient monitoring Disaster Management Anaesthesia & critical care
Self-directed learning	Coursera / SWAYAM Anaesthesia Equipment
Patient-centric and Evidence-based learning	Clinical Anaesthesia Management I – IV Anaesthesia & critical care

	Advanced Anaesthesia Techniques
The Humanities	Bioethics
Project-based learning	Biostatistics & Research Methodology Dissertation
Role-play	Monitoring equipment and patient monitoring Bioethics Disaster Management Health Care Management
Team-work	Disaster Management
Reflective writing	Clinical Anaesthesia Management I – IV
Any other (Simulation based learning)	Clinical Anaesthesia Management I – IV

10. Scheme of Examination

10.1. Continuous Internal assessment format (distribution of marks)

Continuous Internal assessment components	Maximum marks
Average of two IA tests	20
Case Studies/Seminar/Assignments/Quizzes etc.	30
Total marks	50

10.2. Question Paper Pattern

Subjects having maximum marks = 50				**Duration**
Type of question	**Number of questions**	**Marks for each question**	**Total**	150 min
Long essay type	02	15	30	
Short essay type	02	10	20	
Total			50	

10.3. Practical examination

Sl.No	**Components**	**Marks**
1	Spotters	10
2	Case Scenario/OSCE/OSPE	20
3	Viva Voce	20
Total Marks		50

10.4. Particulars of practical, viva-voce & dissertation

10.4.1 Practical examination will be aimed at examination of clinical skills and competence of the candidates for undertaking independent work as a specialist.

10.4.2 Viva- Voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence &oral communication skills.

10.4.3 Special emphasis shall be given to dissertation work during the M.Sc. A&OTT 2nd Year examination.

10.4.4 The marks of Viva-Voce examination shall be included in the clinical examination to calculate the percentage and declaration of results.

10.4.5 OSCE/OSPE- shall have minimum of 5 stations.

10.5. Evaluation and Certification of online courses

10.5.1 Evaluation will be based on predefined norms and parameters and announced in the overview of the Course at the time of offering the course. Formative continuous online assessments and end of course proctored exams shall be completed by the student.

10.5.2 The certificate obtained shall be submitted to the college office which will be communicated to the office of the Controller of Examinations of Yenepoya (Deemed to be University).

10.5.3 The Yenepoya (Deemed to be) University will give the equivalent credit weightage to the students for the credits earned through online learning courses through MOOCS/Coursera as per the credit plan of the program.

10.6. Credit Mobility of Online Courses

10.6.1 The Yenepoya (Deemed to be University) will give the equivalent credit weightage to the students for the credits earned through online learning courses as per the credit plan of the program.

10.6.2 In case a student fails to complete the online course he/ she may be allowed to complete the course requirements by registering for another online course in subsequent semester or opt for a course offered at Yenepoya (Deemed to be University), provided such a course is offered during that semester.

10.6.3 The elective course offered by the Yenepoya (Deemed to be University) shall be restricted to a maximum of 3 credits.

10.6.4 A candidate shall compulsorily complete total 6 Credits of Multidisciplinary courses.

10.6.5 These courses shall be selected either from the Generic Electives offered by the Yenepoya (Deemed to be) university or from the SWAYAM/Coursera courses. A Candidate shall have freedom to choose the courses of once own choice and learn at their own pace but, require to complete minimum 3 credits before second semester and 6 credits before third semester SEE.

10.6.6 A candidate who wishes to earn additional credits may be permitted to do so during the academic duration. The additional credits earned shall be for enrichment purposes only and shall not be reflected in the marks card and shall

not be considered for grade calculation, credit requirements, or the awarding of grades.

10.7. Continuous Internal Assessment Components of PG Dissertation

Sl. No	Parameters		Marks
1.	Maintaining the timeline		10
2.	Presentation a Conference /CME/Publication (student can choose any of the criteria to avail 40 marks)		40
	Criteria	Marks Allocated	
	Online Oral/Online Poster/Offline Poster presentation/Conference proceeding publications in Scopus/WoS indexed journals/Publication of Copyright	20	
	Offline oral presentation at National/International Conference/Patents/Publication of Review Paper/Pilot Study/Study Protocol in Indexed Journal	40	
3.	Manuscript submission (Based on the dissertation) to the Indexed journals (SCOPUS/WoS) along with submission of final dissertation		50
	Total		**100**

10.8. Assessment of Research project

A declaration by the candidate that the work was done by him/her shall be included. The guide, Head of the Department and Head of the Institution shall certify the bonafide of the project.

Total 200 marks shall be awarded for the research project and the marks distribution as follows:

- 100 marks – Dissertation evaluation by Internal and External examiners
- 100 marks – Continuous Internal Assessment

10.8. Evaluation of Dissertation

10.8.1. Dissertation shall be evaluated by two examiners, one external & one internal for 100 marks from the panel of examiners approved by the Board of Studies and by the University.

10.8.2. The criteria for the evaluation shall be as prescribed by the Board of Studies.

10.8.3. Acceptance of the dissertation is a pre-requisite for a candidate to be eligible to appear in the final examination.

10.9. Guide

10.9.1. The academic qualification and teaching experience required for recognition of guide shall be as given under:

10.9.2. DM in Anaesthesiology with 2 years of teaching experience after MD/DM programme or Ph.D in Anaesthesia Technology or M.Sc. Anaesthesia and Operation Theatre Technology with teaching experience of 3 years after the Masters programme.

10.9.3. Student guide ratio: A recognized guide shall supervise dissertation work of not more than five students per academic year. The age of the guide shall not exceed 65 years.

10.9.4. Co- guide may be included provided the work requires substantial contribution from a sister department of from another institution recognized for teaching Yenepoya University or any other State level University.

10.10. Change of Guide

In the event of registered guide leaving the Institute/ college due to any reason or in the event of death or any other valid reasons, guide can be changed with prior permission from the university only.

11. Eligibility to appear for University Examination

11.1. Each course (theory, practical, clinical etc.) shall be treated as an independent unit for the purpose of attendance. Candidates having minimum 80% attendance in each of the Courses can only qualify to appear for the Semester End Examination. The Candidates with less than 80% of attendance shall be required to repeat that Course by attending the semester. There shall be no provision for condonation of shortage of attendance.

11.2 Evaluation of a course shall be done based on continuous internal assessment (CIA) mode followed by semester end university examination (SEE) for each course.

11.3 The components of CIA (Continuous Internal Assessment) may include sessional tests, Seminar/ Journal Club/ Case Studies /Assignment and other activities as determined by the board of studies in the respective departments.

11.4 The CIA:SEE percentage is 50:50 and minimum marks for CIA shall be 50% and SEE shall be 50%.

11.5 The pass marks per course shall be 50%

There shall be examinations at the end of each semester ordinarily during February/March for odd semesters and August/September for even semesters

11.6 The SEE duration shall be two and half hours.

12. Criteria for passing

12.1 The CIA:SEE percentage is 50:50 and minimum marks for CIA shall be 50% and SEE shall be 50%.

12.2 The pass marks per course shall be 50%

12.3 A candidate shall be declared to have passed the PG program if he/she secures atleast CGPA of 5.0 (Course Alpha-Sign Grade P) in the aggregate of both internal assessment and semester end examination marks.

12.4 The candidates who pass all the semester examinations in the first attempts in Two years are eligible for ranks provided they secure at least a CGPA of 8.0 (atleast Alpha-Sign Grade A).

12.5 The results of the candidates who have passed the fourth semester examination but not passed the lower semester examinations shall be declared as NCL (Not Completed Lower

semester examinations). Such candidates shall be eligible for the degree only after completion of all the lower semester examinations.

12.6 A candidate who passes the semester examinations in parts is eligible for only CGPA and Alpha-Sign Grade but not for ranking.

12.7 There shall be no minimum marks with respect to internal assessment and viva-voce marks.

12.8 A candidate who fails in any of the project work/project report/dissertation shall reappear for the same and pass the examination subsequently within the nearest semester and examination schedule.

13. Carry over provisions

Carry over shall be allowed to the candidates up to IV semesters.

14. Grading and Classification

The results of successful candidates at the end of each semester shall be declared in terms of Grade Point Average (GPA) and Alpha-Sign Grade. The results at the end of the sixth semester shall be classified on the basis of the Cumulative Grade Point Average (CGPA) obtained in all the four semesters and the corresponding overall alpha sign grade.

a. Letter Grades and Grade Points:

Letter Grade	Grade Point	Range of Marks
O+ (Outstanding)	10	90 – 100
O (Excellent)	9	80 – 89.99
A+ (Very Good)	8	70 – 79.99
A (Good)	7	60 – 69.99
B+ (Average)	6	55 – 59.99
P (Pass)	5	50 – 54.99
F (Fail)	<5	< 50

b. Cumulative Grade Point Average (CGPA):

The results at the end of the fourth semester shall be classified on the basis of CGPA obtained in the four semesters and the corresponding overall letter grade. The letter grade as described below shall be adopted.

Letter Grade	CGPA Range
O+ (Outstanding)	9.0 – 10.0
O (Excellent)	8.0 – 8.99
A+ (Very Good)	7.0 – 7.99
A (Good)	6.0 – 6.99
B+ (Average)	5.5 – 5.99
P (Pass)	5.0 – 5.49
F (Fail)	< 5.0

14. Journals

1. British Journal of Anaesthesia.
2. European Journal of Anaesthesiology.
3. Journal of Clinical Anesthesia.

4. Journal of Cardiothoracic and Vascular Anesthesia.
5. Indian Journal of Critical Care Medicine.
6. Journal of Perioperative Practice.

I Semester

Course Title: Basics Sciences related to Anaesthesiology

Course: Core **Credits: 3**

Number of Hours: 45 hours

Course Outcomes:

After successful completion of this course, the student will be able to:

CO1: To learn about the Anatomy and Physiology of different organs of the body and

CO2: To learn the Pharmacology of Various drugs used in Operation theatre, Intensive care unit and Emergency Medicine Department.

Course Content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	10	Applied Anatomy and physiology: Respiratory System				20%	LE, SE
		1.1 Anatomy of the airway: Conducting zones (From nose to bronchioles), Upper Respiratory Tract: Nose, Pharynx, Larynx, Vocal cords. Lower Respiratory Tract: Tracheo Bronchial Tree	✓				
		1.2 Respiratory zone (Respiratory Bronchioles, alveolar duct to alveoli)	✓				

		1.3 Anatomy of the Lungs and Broncho Pulmonary Segments of the Lung	✓				
		1.4 Functions of the Lung and different parts of the Airway	✓				
		1.5 Physiology of Gas Exchange in the lungs		✓			
		1.6 Arterial and Venous Blood gas analysis	✓				
		1.7 Transport of Oxygen and Carbon Dioxide	✓				
		1.8 Hypoxia: Causes and types, Diagnosis, Cyanosis	✓				
Unit II	5	Cardiovascular System, Blood and Nervous system					
		2.1 Heart: Gross Anatomy, Surface Anatomy, Structure of the heart, Chambers, Valves, Functions of the Heart, Coronary circulation, Factors affecting myocardial oxygen demand and supply, Conduction system of the heart, Systemic Circulation, Pulmonary Circulation, Cardiac output, Cardiac cycle, Pre load After load, Heart Rate, Blood Pressure, Pulse.	✓			20%	LE, SE

		2.2 Blood: Total Volume, Components, Functions, Blood and Blood Product Transfusion, Coagulation Cascade	✓				
		2.3 Central Nervous System: Brain, Spinal Cord, CSF, Peripheral Nervous system, Classification of Nerve Fibres, Autonomic Nervous System, Neuromuscular Junction, Contraction of Skeletal Muscles	✓				
Unit III	5	Gastro Intestinal Tract and Hepatobiliary System 3.1 Parts of GIT, Anatomy of the Liver, Hepatic Blood Flow, Factors affecting Hepatic Blood flow, Functions of the Liver, Liver Diseases, Assessment of Liver Function	✓			15%	SE
		3.2 Renal System: Gross Anatomy of the Kidney, Anatomy of Nephron, Functions of the Kidney, Renal Failure, Causes, types, Diagnosis, Precautions to be taken in a patient with Renal Dysfunction	✓				

		3.3 Endocrine System and Hormones		✓			
Unit IV	15	4.1 Basic Principles of Pharmacology	✓			30%	LE, SE
		4.2 Drugs used for Premedication	✓				
		4.3 Opioid and Non-Opioid Analgesics	✓				
		4.4 Intravenous Induction Agents	✓				
		4.5 Inhalational Anaesthetic Agents	✓				
		4.6 Neuromuscular Blocking Agents	✓				
		4.7 Reversal of Neuromuscular Blockade	✓				
		4.8 Local Anaesthetic and Adjuvant	✓				
		4.9 Drugs acting on the autonomic Nervous System	✓				
		4.10 Vasopressor and Inotropes	✓				
		4.11 Antihypertensive and Coronary Vasodilators	✓				
		4.12 Drugs affecting Coagulation	✓				

		4.13 Drugs used to Control Blood Sugar	✓				
		4.14 Bronchodilators	✓				
		4.15 Drugs used for Acid Aspiration Prophylaxis	✓				
		4.16 IV Fluids and Electrolyte solutions	✓				
Unit V	10	Medicine				15%	LE, SE
		5.1 Ischemic heart disease • Itiopathology • Clinical features • Investigations • Management Complications	✓				
		5.2 Shock ➢ Definition ➢ Types ➢ Pathophysiology ➢ Treatment ➢ Details of each type ➢ Ionotropes ➢ Fluids and electrolytes		✓			

		5.3 COPD& bronchial asthma ➢ Pathophysiology ➢ Clinical features ➢ Smoking and its implications ➢ Treatment ➢ Lung Function Tests	✓				

Recommended Books:

1. Morgan GE Jr, Mikhail MS, Murray MJ. Morgan & Mikhail's Clinical Anesthesiology. 6th ed. New York: McGraw-Hill Education; 2018.
2. Barash PG, Cullen BF, Stoelting RK, Cahalan MK, Stock MC. Clinical Anesthesia. 6th ed. Philadelphia: Lippincott Williams & Wilkins; 2009.
3. Miller RD. Miller's Anesthesia. 8th ed. Philadelphia: Elsevier Churchill Livingstone; 2015.

Course Title: Anaesthesia Equipment

Course: Core **Credits: 3**

Number of Hours: 45 hours

Course Outcomes:

After successful completion of this course, the student will be able to:

CO 1: To learn about Medical gases storage and Distribution of Medical Gases. Anaesthesia Machine and Anaesthesia Workstation, Monitoring, Breathing System, Airway equipment, Vaporizers, Anaesthesia Ventilators, Vacuum and Suction Equipment.

CO 2: To comprehend physical principles related to the Medical gases, Functioning of Anaesthesia Machine, workstation, Vaporizer, Breathing System and Suctioning Devices, Maintenance, Troubleshooting, Cleaning, decontamination and sterilization of various equipment used during anaesthesia management.

Course Content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	5	Gas Supply and Distribution System				15%	LE, SE
		1.1 Medical Gas Cylinders and Containers	✓				
		1.2 Medical Gas Pipeline Systems	✓				
		1.3 Suction Equipment	✓				
		1.4 Oxygen Concentrators	✓				

Unit II	10	Anaesthesia Machine & Breathing Systems				20%	LE, SE
		2.1 The Anaesthesia Machine and Anaesthesia Workstation	✓				
		2.2 Vaporizers	✓				
		2.3 The Breathing System: General Principles, Common Components, and Classifications	✓				
		2.4 Mapleson Breathing Systems	✓				
		2.5 The Circle System	✓				
		2.6 Manual Resuscitators	✓				
		2.7 Humidification Equipment	✓				
		2.8 Anaesthesia Ventilators	✓				
		2.9 Controlling Trace Gas Levels		✓			
		2.10 Hazards of Anaesthesia Machines and Breathing Systems	✓				
Unit III	10	Airway Equipment				20%	LE, SE
		3.1 Face Masks and Airways	✓				
		3.2 Supraglottic Airway Devices	✓				
		3.3 Laryngoscopes	✓				
		3.4 Lung Isolation Devices	✓				
		3.5 Devices for Managing the Difficult Airway	✓				
Unit IV	10	Monitoring Devices					
		4.1 Pulse Oximetry	✓				
		4.2 Inspired and Expired Gas Monitoring	✓				

		4.3 Airway Volumes, Flows, and Pressures	✓			30%	LE, SE
		4.4 Neuromuscular Transmission Monitoring	✓				
		4.5 Alarm Devices		✓			
		4.6 Non-invasive Blood Pressure Monitors	✓				
		4.7 Invasive Pressure Monitoring	✓				
		4.8 Depth of Anaesthesia Monitoring	✓				
		4.9 Temperature Monitoring	✓				
		4.10 Data Management Systems		✓			
Unit V	5	Equipment Related to Environmental Situation				10%	SE
		5.1 Equipment for the Magnetic Resonance Imaging Environment	✓				
		5.2 Temperature Control Equipment	✓				
		5.3 Operating Room Fires and Personnel Injuries Related to Sources of Ignition		✓			
Unit VI	5	Equipment Maintenance				5%	SE
		6.1 Cleaning and Sterilization	✓				
		6.2 Equipment Checkout and Maintenance		✓			

Recommended Books:

1. Dorsch JA, Dorsch SE. Understanding Anesthesia Equipment. 5th ed. Philadelphia: Wolters Kluwer Health; 2008.
2. Davey A, Diba A. Ward's Anaesthetic Equipment. 6th ed. London: Saunders Elsevier; 2011.
3. Pillai A. Manual of Anaesthesia for Operation Theatre Technicians. 1st ed. New Delhi: Jaypee Brothers Medical Publishers; 2016.

Course Title: Biostatistics & Research Methodology

Course: Core **Credits: 3**

Number of Hours: 45 hours

Research Methodology

Course Outcome:

After successful completion of this course, the student will be able to:

CO 1: Have knowledge of process involved in Biomedical research from formulation to publication.

CO 2: Be able to draft a research proposal.

Course Content:

UNIT	HRS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO	WEIGHTAGE	TYPE OF QUESTION
Unit I	2 hours	1. Introduction 1.1 Need for research	✓			10%	SE
		1.2 Types of research	✓				
		1.3 Outlining the research process	✓				
Unit II	2 hours	2. Review of Literature 2.1 Importance, sources & steps	✓			10%	SE
		2.2 Critical appraisal of research article	✓				

Unit III	2hours	3. Research Design 3.1 Types of research – Qualitative & Quantitative	✓			10%	LE,SE
		3.2 Experimental & Non Experimental, Survey – advantages & disadvantages	✓				
Unit IV	2 hours	4. Research Process 4.1 Framing a research question	✓			15%	LE,SE
		4.2 Research title	✓				
		4.3 Aim & Objectives, Assumptions, Limitations & Delimitations, Variables	✓				
		4.4 Hypothesis – formation & testing	✓				
Unit V	2 hours	5. Data collection & analysis 5.1 Data sources, technique of data collection, tools	✓			20%	LE,SE
		5.2 Reliability & validity	✓				
		5.3 Process of data collection	✓				
		5.4 Pilot study – method, need	✓				
Unit VI	2 hours	6. Interpretation & presentation of data	✓			15%	LE,SE
		6.1 Qualitative & quantitative analysis					
		6.2 Graphical representation of data	✓				

		6.3 Conclusion & discussion	✓				
Unit VII	2 hours	7. Discussion, Conclusion and References	✓			10%	SE
Unit VIII	2 hours	8. Essentials of writing a research paper along with process of publication	✓			10%	LE

Biostatistics

Course Content:

		3. Sampling distributions 3.1 Parameter and Statistic. Standard error. Basic probability distributions - Normal, poisson, binomial distributions with their applications in biological sciences.	✓					
UNIT III	3 hours	CONTENT	MUST KNOW		GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE	TYPE OF QUESTION
		1. Introduction 1.1 Introduction to biostatistics &research methodology, types of variables & scales of measurements, measure of central tendency & dispersion, rate, ratio, proportion, incidence & prevalence						
Unit I	6hours	4. Tests of significance 4.1 Basics if testing of hypothesis – Null & Alternative hypothesis, type 1 and type II errors, level of significance (parametric) & power of the tests, p value, Confidence interval. Tests of significance – T test (paired & UN paired), Chi square test & Test of proportion. One way analysis of variance. Repeated measures analysis of variance. Tests of significance (non parametric) – Mann – Whitney U Test,	✓				5%	LE,SE
Unit IV Unit II	6 hours 3 hours	2. Sampling 2.1 Population & sample, Sampling and non-sampling errors and methods of minimizing these errors, Random and non-random sampling, different sampling techniques – simple random, stratified, systematic, cluster& multistage.	✓				15% 10%	LE,SE LE,SE

		Wilcoxon Test, Kruskal – Wallis Analysis of variance, Friedmann's Analysis of variance					
Unit V	3 hours	5. Correlation and regression 5.1 Linear correlation by Karl Pearson and rank order correlation due to Spearman, Testing the significance of correlation co efficient, simple linear regression – estimation & testing, residual plots, multiple linear regression.	✓			15%	LE
Unit VI	3 hours	6. Sample size determination 6.1 General concept. Sample size for estimating means and proportion, testing of difference in means and proportions of two groups.	✓			5%	SE

Unit VII	2 hours	7. Study designs 7.1 Epidemiological methods – case series analysis and prevalence studies. Analytical epidemiological methods – case control and cohort studies. Clinical trials / intervention studies, odds ratio and relative risk, stratified analysis	✓			10%	SE
Unit VIII	2 hours	8. Multivariate analysis 8.1 Concept of multivariate analysis, introduction to logistic regression and survival analysis	✓			15%	LE,SE
Unit IX	1 hours	9. Reliability and validity of diagnostic tests 9.1 Sensitivity, Specificity, Positive Predictive Value (PPV), Negative	✓			10%	LE,SE

		Predictive Value (NPV), ROC curve.					
Unit X	1 hours	10. Format of scientific documentations 10.1 Structure of research protocols, structure of thesis/research report, formats of reporting in scientific journals. Systematic review and meta-analysis.	✓			10%	LE, SE

Recommended Books:

1. Rao NSN. Applied statistics in health sciences. New Delhi: JP Publishers;2007.
2. Mahajan BK. Methods of biostatistics. Bombay: Kothari Book Depot.
3. Potti LR. A textbook of statistics. Trivandrum: Yamuna Publications.
4. Lancaster HO. Introduction to medical statistics. New York: John Wiley & Sons.
5. Leius AE. Biostatistics. New York: Reinhold Publishing Co.
6. Cotton T. Statistics in medicine. Boston: Little, Brown & Co.
7. Hill AB. Principles of medical statistics. New York: Oxford University Press.

Course Title: Clinical Anaesthesia Management I

Practical I

Course: Core **Credits: 4**

Number of Hours: 120 hours

Course outcomes:

After successful completion of this course, the student will be able to:

CO1: Prepare the operation theatre with appropriate anaesthesia equipment, drugs, and emergency setups as per surgical requirements.
CO2: Assist in preoperative patient reception, verification of surgical safety checklist, and documentation of baseline vital parameters.
CO3: Assist the anaesthesiologist during induction, maintenance, and recovery of anaesthesia under supervision.
CO4: Perform peri-operative patient positioning while ensuring safety, pressure care, and aseptic precautions.
CO5: Monitor and document vital parameters throughout the peri-operative period.
CO6: Assist in airway management, including anticipated and unanticipated difficult airway situations.
CO7: Maintain infection control practices and aseptic environment in the operation theatre and recovery room.
CO8: Assist in postoperative transfer and monitoring of patients in the recovery area.

Course Content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	30	Preparation of the drugs and equipment for administration of Anaesthesia. To prepare the Operation theatre when Difficult Airway is expected	✓			10%	
Unit II	20	Receiving the patient for Surgery and Anaesthesia in the pre-operative holding area. Verifying the preoperative checklist	✓			10%	
Unit III	20	Documenting the Vital Parameters	✓			5%	
Unit IV	30	Care of the Patient during Transport to the Operation theatre. Maintaining Aseptic environment in the operation theatre	✓			5%	
Unit V	20	Assisting the Induction of Anaesthesia	✓			5%	
Unit VI	30	Positioning the Patient for Induction of General Anaesthesia and Administration of Regional Anaesthesia	✓			10%	
Unit VII	30	Assisting during Unanticipated Difficult Airway. Surgical Safety Checklist	✓			10%	

Unit VIII	20	Vital Parameter Monitoring	✓			10%	
Unit IX	30	Hypothermia during surgery: Precaution and prevention Maintenance of Anaesthesia	✓			10%	
Unit X	20	Recovery of Anaesthesia	✓			5%	
Unit XI	20	Transport of patient to Recovery Room	✓			5%	
Unit XII	30	Setting up a recovery room to receive patient after surgery monitoring the Patient in Recovery Room		✓		5%	
Unit XIII	30	Fluid therapy in the Peri-operative period	✓			10%	

Practical II

Course: Core **Credits: 8**

Number of Hours: 240 hours

Course Outcomes:

After successful completion of this course, the student will be able to:

CO 1: Monitoring the anaesthetic patients in peri-operative period.

CO 2: Acquire knowledge about assessment and care of patient in peri-operative period.

CO 3: To acquire the knowledge about all of the anaesthetic drugs and equipment.

CO 4: Skills of handling equipment and dilution of the drugs.

Course content:

In the clinical hours the student will get experience in various anaesthetic and surgical techniques in operation theatre under the supervision of anaesthetists. And assist the anaesthetist as per the requirement. And able to maintain the operating room.

Recommended Books:

1. Yadav A. Short textbook of anaesthesia. 6th ed. New Delhi: Jaypee Brothers Medical Publishers;2018.
2. Bhalla P. Textbook for operation room technicians. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers.
3. Shenoy RK, Nileshwar A. Manipal manual of instruments. Manipal: Manipal Press.
4. Miller RD. Miller's anesthesia. 8th ed. Philadelphia: Elsevier Churchill Livingstone; 2015.

II Semester

Course Title: Monitoring equipment and patient monitoring

Course: Core **Credits: 3**

No. of Hours: 45 hours

Course outcome

After successful completion of this course, the student will be able to:

CO 1: To find out the indications of monitoring of ventilation and circulation, setting of monitoring

CO 2: Knowledge to do the monitoring of equipment

CO 3: To setup the monitoring of temperature, depth of anaesthesia

Course Content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	10	Monitoring Equipments				20%	LE, SE
		1.1 Respiratory gas monitoring and minimum alveolar concentration	✓				
		1.2 Equipments to measure depth of anaesthesia ❖ Bispectral index ❖ Entropy	✓				
		1.3 Neuromuscular block monitoring equipments	✓				

		1.4 Equipment for central neuraxial and regional blocks • Needles • Catheters • Nerve locators • Ultrasound device	✓				
		1.5 Anaesthesia equipment for magnetic resonance imaging	✓				
		1.6 Equipment for anaesthesia in remote locations	✓				
		1.7 How to Interpret X- rays, CT scan, and MRI in clinical anaesthesia practice		✓			
Unit II	10	Mechanical Ventilator				20%	LE, SE
		1.1 Working principles of ventilator	✓				
		1.2 Types of ventilators	✓				
		1.3 Mechanical ventilation modes and setting	✓				
		1.4 Ventilation-induced lung injury	✓				
		1.5 Non-conventional ventilation	✓				
		1.6 Weaning from the ventilator	✓				
Unit III	10	Monitoring techniques					

		3.1 Invasive Blood Pressure (IBP) monitoring	✓			30%	LE, SE
		3.2 Trans Esophageal Doppler (TED)	✓				
		3.3 Measurement of Central Venous Pressure (CVP)	✓				
		3.4 Pulmonary Artery Catheterization	✓				
		3.5 Arterial Blood Gas (ABG) analysis	✓				
		3.6 Intra Cranial Pressure (ICP) measurement		✓			
		3.7 Intra-Abdominal Pressure (IAP) measurement		✓			
Unit IV	5	Body Temperature Monitoring				10%	SE
		4.1 Temperature monitoring sites	✓				
		4.2 Temperature measurement principle	✓				
		4.3 Temperature monitoring guidelines	✓				
Unit V	10	Monitoring Oxygenation					
		5.1 Pulse oximetry	✓				
		5.2 Capnography	✓				
		5.3 Arterial and venous blood gases	✓				
		5.4 Hypoxia	✓				

		5.5 Hypercarbia	✓			20%	LE, SE

Recommended Books:

1. Yadav A. Short textbook of anaesthesia. 5th ed. New Delhi: Jaypee Brothers Medical Publishers;2018.
2. Bhalla P. Textbook for operation room technicians. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers.
3. Miller RD. Miller's anaesthesia. 8th ed. Philadelphia: Elsevier Churchill Livingstone; 2015.
4. Blitt CD. Monitoring in anaesthesia and intensive care medicine. New York: Churchill Livingstone.

Course Title: Operation Theatre Management and Sterilization

Course: Core **Total Credits: 3**

Number of Hours: 45 hour

Course outcome:

After successful completion of this course, the student will be able to:

CO 1: Ability to maintain well organized workflow in the operation theatre, and should able to maintain records

CO 2: Knowledge about different techniques of decontamination, disinfection and Sterilization.

CO 3: Knowledge about the equipment sterilization used in operation theatre

CO 4: Knowledge about CSSD

CO 5: Ability to prevent the chances of needle stick and the management

CO 6: Knowledge about biomedical management

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	10	Decontamination, disinfection and Sterilization					
		1.1 Decontamination, disinfection and Sterilization	✓				
		1.2 Methods of Sterilization: Physical Method, Chemical Method	✓				

		1.3 Description of Various Methods and Chemical Agents	✓			20%	LE, SE
		1.4 Sterilization of Various types of Equipment Used for Surgery and Anaesthesia	✓				
Unit II	10	Daily terminal cleaning				10%	SE
		2.1 Daily terminal cleaning in the operation room, Outside the operating room, weekly or monthly cleaning, Cart system Clean up	✓				
		2.2 Mechanical washing, Ultrasonic cleaner, Sterilization of endoscopic instruments, Care of microsurgical instruments		✓			
		2.3 Assembly of instrument sets, Components of Various sets, Packing instruments & other items for sterilization		✓			
Unit III	5	Central sterile supply department				20%	LE, SE
		3.1 Different areas and the floor plan	✓				
		3.2 Loading and Removal of the sets in Different Sterilizer	✓				
		3.3 Indicator to Test the efficiency of Sterilization	✓				
		3.4 Handling sterile items in OT. Preparation of Instrument sets for Surgery. Checking the sets for Proper Sterilization		✓			

Unit IV	10	Disinfection of the patient care unit and Large Equipment				20%	SE
		4.1 Taking Samples for Microorganism culture from Operation theatre, ICU and Post Op Ward. Disinfection/Sterilization of the Operation Theatre, Intensive Care Unit/ Post op ward		✓			
		4.2 Disinfection of the Anaesthesia Workstation, Ventilators, Robot, Microscope, C Arm, OT Table	✓				
		4.3 Disinfection of HBV-, HCV-, HIV- or TB- contaminated Devices and Operation theatre	✓				
		4.4 Air Disinfection, Surface Disinfection	✓				
		4.5 Reprocessing of Endoscopes, Laparoscopes and Arthroscopes		✓			
Unit V	10	Safe Injection Practices				30%	LE, SE
		1.1 Prevention and Management of Needle Stick Injury	✓				
		1.2 Standard Precautions universal precautions	✓				
		1.3 Hand washing, Personal Protective Equipments	✓				

		1.4 Respiratory hygiene (cough etiquette) and transmission-based precautions (contact, droplet, and airborne)	✓				
		1.5 Biomedical waste Management	✓				
		1.6 WHO checklist	✓				

Recommended Books:

1. Bhalla P. Textbook for operation room technicians. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers.
2. Pillai A**.** Manual of anaesthesia for operation room technicians. 1st ed. New Delhi: Jaypee Brothers Medical Publishers.
3. Kapur MM**.** Introduction to surgical instruments and procedures for undergraduate. New Delhi: CBS Publishers & Distributors.
4. Kapil A, editor. Ananthanarayan and Paniker's textbook of microbiology. 9th ed. New Delhi: Universities Press**.**

Course Title: Applied Surgical Technology

Course: Core **Total Credits: 3**

Number of Hours: 45 hours

Course outcome:-

After successful completion of this course, the student will be able to:

CO 1: Knowledge different diagnostic procedures and documentation

CO 2: Should able to understand the prophylaxis of antibiotic and the aseptic techniques.

CO 3: Should acquire the knowledge about surgical and anaesthetic instruments in operation theatre

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	10	Developing a surgical diagnosis					
		1.1 Complete and thorough history	✓				
		1.2 Physical Examination ➢ Radiographic findings ➢ Laboratory investigations ➢ Record keeping ➢ Differential diagnosis	✓			15%	LE, SE
		1.3 Basic necessities for surgery	✓				
Unit II	15	Aseptic surgery					
		2.1 Medical asepsis	✓				

		2.2 Surgical asepsis	✓				
		2.3 Pre surgical preparation of the patient	✓			30%	LE, SE
		2.4 Surgical Infection ➢ Factors for wound infection ➢ Management of abscess Antibiotic prophylaxis	✓				
		2.5 Infection prevention and universal precautions	✓				
		2.6 Surgical Incisions	✓				
		2.7 Hemostasis 1. Means of promoting wound Hemostasis Dead space management	✓				
Unit III	10	Patient care and management					
		Decontamination and debridement	✓				
		Edema control	✓				
		Patient general health and nutrition	✓				
		Wound management Prevention of wound infections	✓				
		Suture techniques	✓				
		Anastomoses	✓			20%	LE, SE
		Abdominal drainage	✓				

		Basic surgical and perioperative considerations • Antibiotic prophylaxis Prevention of infection in postoperative period	✓				
Unit IV	10	Patient Safety				35%	LE, SE
		4.1 Admission Procedure		✓			
		4.2 Procedure for Safely Transferring the Patient to the Operating Table	✓				
		4.3 Positioning	✓				
		4.4 Surgical Instrumentation • Functioning • Uses • Maintenance • Risks and precautions	✓				
		4.5 Electrocautery	✓				
		4.6 Harmonic cautery	✓				
		4.7 Lasers	✓				
		4.8 Surgical bio-microscopes	✓				
		4.9 X-ray		✓			
		4.10 Endoscopes	✓				

Recommended Books:

1. Jain SK, Stoker DL, Tanwar R. Basic surgical skills and techniques. New Delhi: Jaypee Brothers Medical Publishers.
2. Rothrock JC, McEwen DR, editors. Berry & Kohn's operating room technique. Latest ed. St. Louis: Elsevier Mosby.
3. Pocket guide to the operating room. Latest ed. New Delhi: Jaypee Brothers Medical Publishers.

Course Title: Bioethics

Course: Core **Total Credits: 3**

Number of Hours: 45 hours

Course Outcomes:

a. Locate the importance of bioethics in health care and research
b. Understand the ethical principles and theories
c. Identify ethical issues in healthcare setting and their possible solutions
d. Analyse the ethical issues in specific clinical settings
e. Apply ethical principles in clinical research
f. Locate the importance of healthcare provider- patient relationship

Course Content:

Unit	Hrs	Content	Must	Good to	Desirable	Weightage (%)	Type of Questions
I	5	**Introduction to bioethics** 1.1 Definition and scope of bioethics	✓			10	LE, SE
		1.2 History of bioethics		✓			
		1.3 Codes of ethics	✓				
II	5	**Ethical principles and theories** 2.1 The ethical principles	✓			30	LE, SE

		2.2 Ethical theories and their	✓				
		2.3 Application of ethical theories and principles in healthcare	✓				
III	10	**Ethics in healthcare** 3.1 Consent	✓			20	LE, SE
		3.2 Risk: benefit analysis	✓				
		3.3 Distributive justice		✓			
		3.4 Privacy and confidentiality	✓				
		3.5 Stigma and discrimination		✓			
		3.6 Health technology assessment			✓		
		3.7 Public health ethics			✓		
IV	15	**Specific ethical issues in healthcare** 4.1 End of life care and euthanasia	✓			10	SE
		4.2 Artificial reproductive techniques			✓		
		4.3 Medical termination of pregnancy		✓			
		4.4 Pre-natal sex determination		✓			
		4.5 Organ donation		✓			

		4.6 Medical errors and truth telling	✓				
		4.7 Medical negligence and malpractice	✓				
V	10	**Research ethics** 5.1. Research ethics principles	✓			30	LE, SE
		5.2. Informed consent	✓				
		5.3. Vulnerability in research	✓				
		5.4. Responsible conduct of research	✓				
		5.5. Publication ethics	✓				

Recommended Books:

1. English DC. Bioethics: a clinical guide for medical students. New York: McGraw-Hill.
2. Tayaoe MC. Textbook of medical bioethics, attitude and communication for medical students. New Delhi: CBS Publishers & Distributors; 2016.
3. Palatty PL. A textbook of bioethics for healthcare professionals. 1st ed. New Delhi: Jaypee Brothers Medical Publishers; 2018.

Course Title: Clinical Anaesthesia Management II

Practical I

Course: Core **Total Credits: 4**

Number of Hours: 120 hours

Course Outcomes:

After successful completion of this course, the student will be able to:

CO1: Conduct systematic pre-anaesthetic assessment including airway evaluation, ASA grading, and review of investigations.

CO2: Prepare patients for anaesthesia by implementing fasting guidelines, premedication, and informed consent procedures.

CO3: Set up and assist in basic and advanced anaesthesia monitoring as per patient condition and surgical needs.

CO4: Prepare and check anaesthesia machines, suction devices, electrocautery, tourniquet, and ultrasound equipment.

CO5: Assist in general, regional, and monitored anaesthesia care techniques under supervision.

CO6: Maintain accurate anaesthesia and operation theatre records.

CO7: Demonstrate safe handling of patients, drugs, and equipment during the peri-operative period.

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	60	Assessment					

		1.1 Assessment of patients • Pre-anaesthetic evaluation • Clinical investigations and ASA grading • Physical examination • Systemic examinations	✓			30%	-
		1.2 Airway assessments a) Mallampatti grading b) Thyromendal distance c) Neck movement	✓				
		• Assessment of TM joint function • Grading of difficult laryngoscopy					
Unit II	60	Preparation of patient				20%	-
		2.1 Preoperative instructions • Modification in pre-existing medical therapy of drugs • Fasting instructions • Hygienic instruction • Consent • Premedication	✓				
Unit III	70	Monitoring in anaesthesia					
		3.1 Clinical monitoring • Skin • Blood pressure • Stethescopy • Urine output	✓				

		3.2 Basic monitoring • ECG • Invasive and non-invasive blood pressure • Pulse oximeter • Capnography	✓			20%	-
		3.3 Advanced monitoring a) Central venous pressure monitoring b) Pulmonary artery catherization c) Echocardiography d) Temperature monitoring e) Neuromuscular monitoring f) Central nervous system monitoring	✓				
Unit IV	50	Preparation and maintenance of operation theatre				30%	-
		4.1 Checking of anaesthesia machine	✓				
		4.2 Handling of suction apparatus and electro cautery	✓				
		4.3 Tourniquet and ultra sound machine	✓				
		4.4 Positions used for anaesthesia and surgery	✓				
		4.5 Maintaining daily records of anaesthesia working units	✓				

Practical II

Course: Core **Total Credits: 4**

Number of Hours: 120 hours

Course Outcomes:-

After successful completion of this course, the student will be able to:

CO 1: Connecting basic and advance monitoring to the patient as per the instructions of anaesthetists

CO 2: Preparing equipments and instruments for general, regional anaesthesia and nerve blocks

CO 3: Preparation of ET tube connecting arterial line

Course content:-

In the peri-operative period student will assist the anasthetists as per the requirement and will arrange the instruments and equipments used to provide anaesthesia for the patient, handle patient carefully.

Recommended Books:

1. Yadav A. Short textbook of anaesthesia. 6th ed. New Delhi: Jaypee Brothers Medical Publishers;2018.
2. Bhalla P. Textbook for operation room technicians. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers.
3. Shenoy RK, Nileshwar A. Manipal manual of instruments. Manipal: Manipal Press.
4. Miller RD. Miller's anesthesia. 8th ed. Philadelphia: Elsevier Churchill Livingstone; 2015.

III Semester

Course Title: Sub Speciality Surgical Techniques

Course: Core **Total Credits: 3**

Number of Hours: 45 hours

Course Outcomes:

CO 1: Discuss principles of laparoscopic and robotic surgery.

CO 2: Assess and discuss management of neck and spine trauma.

CO 3: Diagnose and manage facial trauma, plastic and reconstructive surgery and elective orthopedics

CO 4: Discuss elective neurosurgery and cardiac surgery

CO 5: Discuss thoracic pathology, vascular surgery and organ transplantation

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	5	Minimal invasive surgery					
		1.1 Principles of laparoscopic surgery • Advantages and disadvantages • Safety issues and indications • Postoperative	✓			10%	LE, SE

		care					
		1.2 Principles of robotic surgery • Advantages and disadvantages • Safety issues and indications • Postoperative care	✓				
Unit II	10	Neck and spine					
		2.1 The accurate assessment of spinal cord injuries	✓				
		2.2 The basic management of spinal trauma and major pitfalls	✓				
		2.3 Post operative care	✓				
		2.4 Elective neurosurgery	✓				
		2.5 Head injury	✓				
		2.6 Investigation and treatment for intracranial infection	✓				
		2.7 Treatment for hydrocephalus	✓			20%	LE, SE
		2.8 Management of intracranial haemorrhage	✓				
		2.9 Management of epilepsy	✓				
		2.10 Understanding the principles involved in brain death	✓				
Unit	8	Plastic and reconstructive surgery					

III		3.1 Trauma to the face and mouth • Classification of facial fractures • Diagnosis and management of fractures	✓			20%	LE, SE
		3.2 Plastic and reconstructive surgery a) The spectrum of plastic surgical techniques b) The various skin grafts c) The principles and use of flaps d) Plastic surgery to manage difficult and complex tissue loss	✓				
Unit IV	10	Cardiovascular -thoracic surgery				20%	LE, SE
		4.1 Cardiac surgery • The role of investigation in planning of surgery • The management of coronary heart disease • The role of surgery in valvular heart disease • Special role of surgery in congenital heart disease • The management of aortic vascular and pericardial disease	✓				
		4.2 The thorax b) Investigation of chest pathology	✓				

		c) Surgical oncology as applied to chest surgery					
		4.3 Vascular surgery 2. Investigation for vascular surgery 3. Management technique of vascular surgery a. Direct repair by stunting b. Endarterectomy c. Bypass	✓				
Unit V	7	Organ Transplantation				20%	LE, SE
		5.1 What is organ transplantation	✓				
		5.2 The transplant process	✓				
		5.3 Timeline of medical and legal advances in organ transplantation		✓			
		5.4 Cadaveric organ donation	✓				
		5.5 Living organ donation	✓				
		5.6 Alternative organs	✓				
		5.7 The impact of transplantation	✓				
Unit VI	5	Elective orthopaedics				10%	SE
		6.1 Upper limb – pathology, assessment and management	✓				
		6.2 Hip and knee	✓				
		6.3 Foot and ankle	✓				
		6.4 Paediatric orthopaedics	✓				

Recommended Books:

1. Williams NS, O'Connell PR, McCaskie AW, editors. Bailey & Love's short practice of surgery. Latest ed. London: CRC Press.
2. Das S. Textbook of surgery. Latest ed. Kolkata: Dr S Das.
3. Shenoy KR, Shenoy A. Manipal manual of surgery. New Delhi: CBS Publishers & Distributors.
4. Roy H. Short textbook of surgery. New Delhi: Jaypee Brothers Medical Publishers

Course Title: Advanced Anaesthesia Techniques

Course: Core **Total Credits: 3**

Number of Hours: 45 hours

Course outcomes:

CO 1: Explain the different techniques of regional anaesthesia.

CO 2: Recognize modern technologies in anaesthesia practice.

CO 3: Describe the technique of general anaesthesia and management of its complications.

CO 4: Understand and apply the guidelines and protocols in anaesthesia.

CO 5: Discuss the anaesthetic emergencies and their management.

CO 6: Understand the delivery of anaesthesia for emergency surgery

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	10	Regional Anaesthesia					
		1.1 Central neuraxial blockade • Potential benefits of central neuraxial block • Mechanism of action, spread, uptake &elimination • Ultrasound for central neuraxial blockade	✓			20%	LE, SE

		1.2 Peripheral nerve blocks	✓				
		1.3 Post anaesthesia care	✓				
		1.4 Ultrasound in ICU • FAST • Volume assessment • Thoracic ultrasound		✓			
Unit II	10	Review of modern technology in anaesthesia					
		2.1 Ultrasound	✓				
		2.2 Fiberoptics	✓				
		2.3 X-ray	✓				
		2.4 Smart Pumps and Computer-Controlled Drug Infusion Delivery	✓			20%	LE, SE
		2.5 Anaesthesia information management systems	✓				
		2.6 Clinical information systems in critical care		✓			
		2.7 Decision support system		✓			
Unit III	7	General Anaesthesia					
		3.1 Types and techniques	✓				
		3.2 Awareness during anaesthesia	✓				
		3.3 Complications	✓				
		3.4 The long term effects of general anaesthesia	✓			20%	LE, SE
		3.5 Management of general anaesthesia	✓				
		3.6 Anaesthesia and children	✓				

Unit IV	8	Anaesthetic emergencies				20%	LE, SE
		4.1 Emergency anaesthesia guidelines • Incidence and risk factor	✓				
		4.2 Anaesthetic emergencies Airway emergencies ii. Anaphylaxis iii. Local anaesthetic toxicity iv. Malignant hyperthermia	✓				
Unit V	10	The principles and conduct of anaesthesia for emergency surgery				20%	LE, SE
		5.1 Choice of anaesthetic technique	✓				
		5.2 Management and protection of the airway including pulmonary aspiration	✓				
		5.3 The rapid sequence induction: evolution over time	✓				
		5.4 Management of ventilation	✓				
		5.5 Maintenance of anaesthesia	✓				

Recommended Books:

1. Agasthi TK. Textbook of anaesthesia for postgraduates. New Delhi: Jaypee Brothers Medical Publishers.
2. Paul AK. Step-by-step practical aspects of emergency anaesthesia. New Delhi: Jaypee Brothers Medical Publishers.
3. Dutta Gupta S. Anaesthesiology updates for postgraduates. New Delhi: Jaypee Brothers Medical Publishers

Course Title: Healthcare Management

Course: Core **No. of Hours: 45**

Credits: 3

Course Outcome:

CO 1: Concepts of Hospital - The hospital administration & planning

CO 2: Workflow in hospitals - Enumerate and identify various Clinical Services like OPD, IPD, ward Management, OT, Emergency, disaster Management and ICU.

CO 3: Organizational Structures - To learn to meet special challenges posed by human behavior in workplace of 21st century

CO 4: Quality management - To create an awareness about the process of applying for and implementing various accreditation process in healthcare facilities.

Course Content:

Unit	Hrs	Content	Must	Good to	Desirabl	Weightage	Type of Questions
I	**4**	Hospital Structure 1.1. Introduction to Hospitals, Healthcare & Medical Care, Rationale of Hospital Administration	a			5	SE
		1.2. History of Hospitals, Public Health Delivery system in India, Types of Hospitals, Voluntary Health Organizations			a		

II	**8**	Management of Healthcare Organizations 2.1 Introduction to Management	a			20	LE, SE
		2.2 Evolution & Theories of Management		a			
		2.3 Management Functions: Planning	a				
		2.4 Organizing	a				
		2.5 Controlling	a				
		2.6 Decision Making	a				
		2.7 Staffing	a				
		2.8 Techniques in Management	a				
III	**7**	Organizational Behavior **3.1** The Importance of Interpersonal Skills, Scope & Process of OB Structure & theories	a			15	Le, SE
		3.2 Motivation - Abraham Maslow's hierarchy of needs theory, Theory X & Y. Contemporary theories of	a				

		motivation.					
		3.3 Foundations of Group Behavior – Formal Vs		a			
		Informal, Social Identity Theory					
		3.4 Organizational Culture		a			
		3.5 Communications in an Organization	a				
IV	**7**	Management and Health Economics 4.1 Demand & Supply	a			20	LE, SE
		4.2 Nature of Costs	a				
		4.3 Marginal cost and breakeven analysis	a				
		4.4 Market structure: Business & Government, Role of Government	a				

V	**7**	Accounting for Hospital Management **5.1** Budgeting & Budgetary control - Classification of budget, P & L, Balance Sheets	a			20	LE, SE
		5.2 Types of Accounts, Debit & Credit	a				
		5.3 Financial Statement Analysis	a				
VI	**7**	Concept of Hospital **6.1** Departmentation in Hospital	a			10	SE
		6.2 Outpatient, Inpatient Services	a				
		6.3 Intensive Care Unit, Emergency Services	a				
		6.4 Laboratory, Radiology	a				
		6.5 Organizing of support services, Utility Services	a				
		6.6 Evaluation of Hospital services – Hospital Statistics	a				
		6.7 Hospital Information Systems - Issues related to Healthcare technology, Planning, Infrastructure	a				

VII	**5**	Evolution of Quality management 7.1 Quality Management Tools & methods	a			10	SE
		7.2 Quality certification & Accreditation – NABH, NABL	a				

Recommended Books:

1 Prasad LM. Principles and practice of management. New Delhi: Sultan Chand & Sons; 2020.

2 Robbins SP, Judge TA, Vohra N. Organizational behaviour. 18th ed. New Delhi: Pearson Education India; 2019.

3 Sakharkar BM. Hospital planning and administration. New Delhi: Jaypee Brothers Medical Publishers; 2008.

4 Francis CM, De Souza MC. Hospital administration. New Delhi: Jaypee Brothers Medical Publishers; 2000.

5 Kulkarni GR, Satyashanker P, Gomes LA. Financial management for hospital administration. New Delhi: Jaypee Brothers Medical Publishers; 2009.

Course Title: Clinical Anaesthesia Management III

Course: Core **Total Credits: 4**

Number of Hours: 120 hours

Course Outcome:

After successful completion of this course, the student will be able to:

CO1. Prepare patients, operation theatre, and equipment for laparoscopic, robotic, neurosurgical, orthopaedic, thoracic, vascular, and transplant surgeries.

CO2. Assist in advanced anaesthesia techniques including general anaesthesia, paediatric anaesthesia, and emergency anaesthesia.

CO3. Identify indications, contraindications, and complications of various anaesthetic techniques and assist in their management.

CO4. Perform cannulation and assist in invasive monitoring and advanced drug delivery systems.

CO5. Assist in trauma care and emergency surgical procedures following established protocols.

CO6. Manage and maintain specialised surgical and anaesthesia equipment used in subspecialty procedures.

CO7. Assist in recognising and managing anaesthetic emergencies in collaboration with the anaesthesia team.

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	40	Preparation of patients for Robotic, neck and spine and laparoscopic surgeries	✓				
		Preparation of Operation Theatre for surgery	✓			20%	-
		Setup of equipments and	✓				

		Instruments for surgeries					
		Safety measures for the surgeries	✓				
		Postoperative care	✓				
Unit II	40	Equipments used for trauma to the face and mouth	✓				
		Management of required instruments	✓			5%	-
		Care of equipments and maintenance	✓				
Unit III	40	Equipments and instruments used in plastic surgeries and orthopaedic surgeries	✓				
		Setting up of required instruments	✓			10%	-
		Equipments and instruments required for paediatric orthopaedic surgeries	✓				
Unit IV	40	Things required for neurosurgery, cardiac, thoracic, vascular surgeries.	✓				
		Maintenance and care of equipment	✓			10%	-
		Technique and indication of surgical instruments	✓				
Unit V	40	Setting up of operation theatre for Organ Transplantation.	✓				
		Equipments recruited for the surgery		✓		10%	-
		Maintenance and management of instruments		✓			
Unit VI	20	Technique of cannulation	✓			10%	-
		FAST	✓				

		Central neuraxial blockade	✓				
Unit VII	20	Diagnostic procedures in anaesthesia	✓			5%	-
		Radiologic diagnosis		✓			
		Techniques of smart pumps and computer- controlled drug infusion delivery	✓				
Unit VIII	30	General anaesthesia	✓			10%	-
		Technique of intubation and	✓				
		extubation	✓				
		Difficult airway cart	✓				
		Stages of general anaesthesia	✓				
		Anaesthesia for children	✓				
Unit IX	30	Emergency anaesthesia	✓			20%	-
		Indications, preparations, special considerations	✓				
		Management of anaesthetic emergencies	✓				
		Choice of anaesthesia in emergency	✓				
		Technique of rapid sequence induction	✓				

Practical II

Course: Core

Number of Hours: 180 hours **Total Credits: 6**

Course Outcomes:

After successful completion of this course, the student will be able to:

CO 1: To know the requirement for various surgical procedures

CO 2: Preparation of patient for surgery and anaesthesia

CO 3: To know the setting up and preparation of patient

CO 4: To know to arrange the equipments and instruments required for the procedures

Course content:

In perioperative area, the student should able to handle the patient for preparation for surgery and anaesthesia, should know to assess the patient for some procedures. They should able to perform cannulation, Assist the different anaesthesia techniques, setting up of infusion pump. To know to perform in emergency anaesthesia

Recommended Books:

1. Yadav A. Short textbook of anaesthesia. 6th ed. New Delhi: Jaypee Brothers Medical Publishers;2018.

2. Bhalla P. Textbook for operation room technicians. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers.

3. Shenoy RK, Nileshwar A. Manipal manual of instruments. Manipal: Manipal Press.

4. Miller RD. Miller's anesthesia. 8th ed. Philadelphia: Elsevier Churchill Livingstone; 2015.

IV Semester

Course Title: Disaster Management

Course: Core **Total Credits: 3**

Number of Hours: 45 hours

Course outcomes:

After successful completion of this course, the student will be able to:

CO 1: Set up and respond for the management of hospital disaster.

CO 2: Understand the basic knowledge to manage the emergencies.

CO 3: Participate in triage and trauma management.

CO 4: Perform Basic Life Support and Advanced Cardiac Life Support.

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	15	Hospital disaster preparedness and response				30%	LE, SE
		1.1 Scope	✓				
		1.2 Coordination and management	✓				
		1.3 Planning, training	✓				
		1.4 Information, communication and documentation	✓				
		1.5 Medico legal concerns	✓				
		1.6 Safety and security	✓				
		1.7 Human resources	✓				
		1.8 Triage	✓				
		1.9 Post disaster recovery	✓				

		1.10 Patient handling	✓				
		1.11 Volunteer involvement and management		✓			
		1.12 Coordination and collaboration with wider disaster preparedness initiatives		✓			
Unit II	10	First aid/Trauma management					
		Aims, principles & rules of first aid First aid box	✓				
		2.2 Trauma management 3 Guidelines, protocols, initial assessment 4 Trauma management in emergency department	✓				LE, SE
		2.3 Wound management in emergency practice • Management of internal and external bleeding	✓			20%	
		2.4 Chemical injury 2.5 Management of drowning	✓			20%	
Unit III	5	Burn care					
		a. Burns i. Prehospital treatment ii. Initial emergency department treatment iii. Airway and respiratory care iv. Fluid resuscitation	✓				LE, SE
Unit	5	Electrical Injury					

IV		○ Electrical injury management ▪ Pre hospital management ▪ Basic life support ▪ Further treatment and transfer	✓			10%	SE
Unit V	10	Cardio pulmonary resuscitation				20%	LE, SE
		○ Basic life support ▪ Algorithm ▪ Mouth to mouth ventilation External cardiac compression	✓				
		5.2 ACLS 3. Defibrillation 4. Vascular access 5. Definitive airway 6. Foreign body obstruction Drugs	✓				
		5.3 CPR in infants and children	✓				
		5.4 Complications of BLS	✓				

Recommended Books:

1. Joshi SG. Disaster management for health care professionals. New Delhi: Jaypee Brothers Medical Publishers

Course Title: Sub Speciality Anaesthesia & Technique

Course: Core **Total Credits: 3**

Number of Hours: 45 hours

Course outcomes:

After successful completion of this course, the student will be able to:

CO 1: Discuss and arrange for the anaesthetic and surgical requirement for the subspecialty surgical procedures in Pediatric, Neuro, Plastic and Reconstructive surgery, Cardiothoracic and vascular surgery, Head and Neck surgery, Ophthalmic procedures, Genitourinary surgeries, Orthopedic surgeries and Obstetrics and Gynecological procedures.

CO 2: Describe the anaesthetic consideration in organ donation and transplant procedures.

CO 3: Understand the medico legal aspects of anaesthesia.

CO 4: Understand the management of pain and evaluate the treatment.

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	8	Head and neck surgeries				20%	LE, SE
		1.1 Anaesthesia for head and neck surgeries	✓				
		1.2 Neurosurgical anaesthesia	✓				
		1.3 Anaesthesia for ophthalmic procedures	✓				
Unit II	7	Paediatric and plastic and reconstructive surgery				20%	

		2.1 Paediatric anaesthesia	✓				
		2.2 Anaesthesia for plastic and reconstructive surgery	✓				LE, SE
Unit III	8	Anaesthesia for cardiothoracic and vascular surgery				20%	
		3.1 Anaesthesia for cardio-thoracic surgery	✓				LE, SE
		3.2 Anaesthesia for vascular surgery	✓				
Unit IV	10	Anaesthesia for genitourinary, orthopaedic and OBG surgeries				20%	LE, SE
		4.1 Anaesthesia for genitourinary surgeries	✓				
		4.2 Anaesthesia for orthopaedic surgeries	✓				
		4.3 Anaesthesia for obstetrics and gynaecological procedures	✓				
Unit V	12	Organ donation and transplant procedures				20%	
		5.1 Anaesthetic considerations in organ donation and transplant procedures	✓				LE, SE
		5.2 Pain management	✓				
		5.3 Legal aspects of anaesthesia	✓				

Recommended Books:

1. Dutta Gupta S. Anaesthesiology updates for postgraduates. New Delhi: Jaypee Brothers Medical Publishers.
2. Aitkenhead AR, Rowbotham DJ, Smith G. Textbook of anaesthesia. Latest ed. Edinburgh: Churchill Livingstone.
3. Smith T, Pinnock C, Lin T, Jones R. Fundamentals of anaesthesia. Latest ed. Cambridge: Cambridge University Press.

Course title: Anaesthesia & Critical care

Course: Core **Total Credits: 3**

Number of Hours: 45 hours

Course outcomes:

After successful completion of this course, the student will be able to:

CO 1: Setting up for different monitoring techniques and interpret the vital records, in particular to ICU.

CO 2: Understand and organize the working principle of ventilator and different modes of mechanical ventilation.

CO 3: Set up for the intubation and tracheostomy in ICU.

CO 4: Measure the values of spirometry

CO 5: Describe the lung injury and ARDS

CO 6: Know the infusion and transfusion therapy.

CO 7: Practice infection control in ICU.

CO 8: Know the transport of critically ill patients.

CO 9: Operate and manage the anaesthetic equipments.

Course content

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	15	Monitoring techniques in ICU practice					
		1.1 Invasive blood pressure (BP) monitoring	✓				
		1.2 Transesophageal doppler (TED)	✓				

		1.3 Measurement of central venous pressure (CVP)	✓			30%	LE, SE
		1.4 Pulmonary artery catheterization	✓				
		1.5 Arterial blood gas (ABG) analysis	✓				
		1.6 Intracranial pressure (ICP) measurement	✓				
		1.7 Intra-abdominal pressure (IAP) measurement		✓			
Unit II	10	Ventilator life support in ICU				25%	LE, SE
		2.1 Working principles of ventilator in ICU	✓				
		2.2 Types of ventilators	✓				
		2.3 Mechanical ventilation modes and settings	✓				
		2.4 Ventilator management	✓				
		2.5 Ventilation induced lung injury	✓				
		2.6 Ventilation monitoring	✓				
		2.7 Non-conventional ventilation	✓				
		2.8 Weaning from the ventilator	✓				
Unit III	8	Airway management				20%	SE
		3.1 Intubation and tracheostomy	✓				
		3.2 Spirometry	✓				
		3.3 Data analysis		✓			
		3.4 Acute lung injury (ALI) and adult respiratory distress syndrome (ARDS)	✓				
Unit IV	5	Fluid management and drug side effect				10%	LE, SE
		4.1 Fluid control and therapy	✓				

		4.2 Drug side effects	✓				
Unit V	5	Supportive care				10%	SE
		5.1 Control of infection	✓				
		5.2 Transport of critically ill	✓				
		5.3 Investigations	✓				
Unit VI	2	Maintenance of anaesthesia equipment				5%	SE
		6.1 Maintenance of anaesthesia carts and machines	✓				

Recommended Books:

1. Marino PL, editor. Civetta, Taylor & Kirbey's Critical Care. Latest ed. Philadelphia: Elsevier.
2. Marino PL. Critical care. Latest ed. Philadelphia: Elsevier.
3. Schumacher H. The ICU book. Latest ed. Philadelphia: Lippincott Williams & Wilkins.
4. Bhalla P. Textbook for operation room technicians. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers.

Course Title: Clinical Anaesthesia Management IV

Course: Core **Total Credits: 4**

Number of Hours: 120 hours

Course outcomes:

After successful completion of this course, the student will be able to:

CO1: Independently prepare operation theatres and anaesthesia workstations for elective and emergency surgeries.

CO2: Assist in anaesthesia management for high-risk, critically ill, and specialty surgical patients.

CO3: Demonstrate competency in advanced monitoring, ventilatory support, and postoperative critical care assistance.

CO4: Assist in disaster management, mass casualty triage, and emergency preparedness in peri-operative settings.

CO5: Apply evidence-based practices, ethical principles, and patient safety standards in clinical anaesthesia care.

CO6: Function effectively as a member of the multidisciplinary healthcare team with professional communication skills.

CO7: Demonstrate leadership, organisational, and decision-making skills in operation theatre and anaesthesia services.

Course content:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	30	Planning, training	✓			10%	-
		Coordination and management	✓				
		Medical legal concerns	✓				
		Safety and security	✓				
		Triage area	✓				
		Patient handling	✓				

Unit II	30	First aid for unconsciousness	✓			10%	-
		Requirements for unconscious patient and management		✓			
		Assessment and management of trauma		✓			
		Management of wound, burn	✓				
		Cardiopulmonary resuscitation	✓				
		ACLS	✓				
Unit III	25	Management of anaesthesia for paediatric anaesthesia	✓			10%	-
		Monitoring and management of neurosurgical anaesthesia	✓				
		Anaesthetic management for plastic and reconstructive surgeries	✓				
Unit IV	30	To know the preparation and management of cardiothoracic and vascular surgery	✓			10%	-
		How to prepare the OT for ophthalmologic surgeries	✓				
		Equipment and instruments required for head and neck surgeries	✓				
Unit V	25	Preparation of operation theatre and equipment for orthopaedic surgeries	✓			10%	-
		Monitoring required for genitourinary surgery	✓				
		Preparation and management of patient for OBG procedures	✓				
Unit VI	25	Preparation of patient and setup of operation theatre for Organ	✓			10%	-

		transplantation					
		Pain management	✓				
		Legal aspects in anaesthesia	✓				
Unit VII	30	Requirement of invasive BP monitoring, technique of IBP	✓			20%	-
		Technique of CVP how to prepare for the procedure	✓				
		Technique of pulmonary artery catheterization	✓				
		ABG	✓				
		Measurement of ICP, IAP	✓				
Unit VIII	25	Working principles of ventilator	✓			10%	-
		Types of ventilator and modes of ventilator	✓				
		Setting up of ventilator	✓				
		Management and monitoring of ventilator	✓				
Unit IX	20	Technique of intubation and tracheostomy	✓			10%	-
		Transport of critically ill patient	✓				
		Maintenance of anaesthesia equipment	✓				

Practical II

Course: Core **Total Credits: 4**

Number of Hours: 120 hours

Course outcomes:

After successful completion of this course, the student will be able to:

CO 1: To know the preparation of patient for different speciality surgeries and how to set the OT for those procedures

CO 2: To know the medical legal aspects and how to manage the pain

CO 3: To understand the need of ventilator and how to do the setting up of ventilator

CO 4: know the different types of ventilator

CO 5: Knowledge about to make the patient to ventilator support with modes of ventilator.

CO 6: To know the triage and management of patient in an emergency

Course content:

Should able to prepare the patient for different speciality surgery, monitor the patient during anaesthesia and surgery. What are the equipment and instruments are required for the surgeries, setting up of operation theatre for various procedures. Management of patient during anaesthesia and surgery. Should be able to perform in an emergency situations, knowledge about resuscitation.

Recommended Books:

1. Yadav A. Short textbook of anaesthesia. 6th ed. New Delhi: Jaypee Brothers Medical Pulishers;2018
2. Bhalla P. Textbook for operation room technicians. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers.
3. Shenoy RK, Nileshwar A. Manipal manual of instruments. Manipal: Manipal Press.
4. Miller RD. Miller's anesthesia. 8th ed. Philadelphia: Elsevier Churchill Livingstone; 2015.

ANNEXURES

List of Annexures:

- ANNEXURE – I: Question Paper Layout for Theory Examination
- ANNEXURE – II: Logbook Format
- ANNEXURE – III: Journal Club Presentation Evaluation
- ANNEXURE – IV: Assignment Guidelines
- ANNEXURE – V: Seminar Assessment
- ANNEXURE – VI: OSPE Checklist