



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A++' Accredited by NAAC

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CHOICE BASED CREDIT SYSTEM

(CBCS)

(with effect from 2025-26 Batches)

Curriculum for

**M.Sc. OPERATION THEATRE &
ANESTHESIA TECHNOLOGY**

Amended as per AC-52/2025, Dated 28/11/2025

Amended History

1. Amended as per AC-51/2025, [Resolution No.3.1(Annexure-3.9)], [Resolution No.3.5, (Annexure-7)]; Dated 29/04/2025.
2. Amended as per AC-52/2025, [Resolution No. 5.1(Annexure-17I)]; [Resolution No. 5.8, (Annexure-24H)]; Dated 28/11/2025.

Resolution No. 3.1 of Academic Council (AC-51/2025):

Resolved to approve the CBCS syllabus, including Program Outcomes (POs), Course Outcomes (COs), and PO-CO Mapping for 15 two-year postgraduate programs under MGMSBS for Semesters I and II. These include: M. Sc. Medical Biotechnology, M.Sc. Medical Genetics, M.Sc. Clinical Embryology, M.Sc. Clinical Nutrition, M.Sc. Medical Dialysis Technology, M.Sc. Molecular Biology, M.Sc. Medical Radiology & Imaging Technology, M.Sc. Cardiac Care Technology, **M.Sc. Operation Theatre and Anaesthesia Technology**, M.Sc. Emergency and Trauma Care, M. Optometry, Master in Hospital Administration, Master of Public Health, M.Sc. Health Informatics & M.Sc. Clinical Research to be effective from batch admitted in Academic Year 2025-26 onwards [ANNEXURE-3.1 to 3.30].

Annexure-3.9 of AC-51/2025



MGM SCHOOL OF BIOMEDICAL SCIENCES, NAVI MUMBAI

(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)

(Deemed to be University u/s 3 of UGC Act 1956)

Grade "A⁺⁺" Accredited by NAAC

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CHOICE BASED CREDIT SYSTEM (CBCS)

(Academic Year 2025 - 26)

Curriculum for

M.Sc. Allied Health Sciences

M.Sc. OPERATION THEATRE & ANESTHESIA TECHNOLOGY

Semester I & II

DIRECTOR'S MESSAGE

Welcome Message from the Director

Dear Postgraduate Students,

Welcome to **MGM School of Biomedical Sciences (MGMSBS), MGMIHS**, a premier institution dedicated to advancing allied and health sciences education. As you embark on this transformative academic journey, you are joining a community that fosters excellence in research, clinical expertise, and innovation.

MGMIHS, accredited with NAAC 'A⁺⁺' Grade (CGPA 3.55, 2022) and recognized as a **Category I Institution by UGC**, offers an ecosystem that nurtures both academic and professional growth. With **NIRF (151-200 rank band) recognition, NABH-accredited hospitals, NABL-accredited diagnostic labs, and JCI accreditation for MGM New Bombay Hospital**, we uphold global benchmarks in education and healthcare.

At MGMSBS, our **15 postgraduate programs** are meticulously designed to align with the National Commission for Allied and Healthcare Professionals (NCAHP) standards, National Education Policy (NEP) 2020, and the National Credit Framework (NCrF). We have implemented the **Choice-Based Credit System (CBCS)** to provide academic flexibility while ensuring rigorous training in clinical and technical skills. Our state-of-the-art research laboratories, digital classrooms, and the Central Research Laboratory (CRL) foster an environment that encourages innovation and evidence-based learning.

Postgraduate education at MGMSBS goes beyond theoretical learning—our curriculum integrates **hands-on clinical training, interdisciplinary collaboration, and exposure to real-world healthcare challenges**. We emphasize **research-driven education**, encouraging students to actively participate in **scientific discoveries, publications, and international collaborations**.

Beyond academics, we believe in **holistic development**, with initiatives such as the **AARAMBH Science and Wellness Club**, which promotes **mental well-being, leadership, and professional networking**.

As you step into this **next phase of academic and professional growth**, we encourage you to explore new ideas, engage in impactful research, and contribute meaningfully to the **healthcare ecosystem**. We are confident that your journey at MGMSBS will shape you into **skilled, compassionate, and visionary professionals**, ready to lead in the ever-evolving healthcare landscape.

We look forward to witnessing your achievements and contributions!

Dr. Mansee Thakur

Director, MGM School of Biomedical Sciences
MGM Institute of Health Sciences, Navi Mumbai

ABOUT MGM SCHOOL OF BIOMEDICAL SCIENCES

Mission

To improve the quality of life, both at individual and community levels by imparting quality medical education to tomorrow's doctors and medical scientists and by advancing knowledge in all fields of health sciences through meaningful and ethical research.

Vision

By the year 2022, MGM Institute of Health Sciences aims to be top-ranking Centre of Excellence in Medical Education and Research. Students graduating from the Institute will have the required skills to deliver quality health care to all sections of the society with compassion and benevolence, without prejudice or discrimination, at an affordable cost. As a research Centre, it shall focus on finding better, safer and affordable ways of diagnosing, treating and preventing diseases. In doing so, it will maintain the highest ethical standards.

About–School of Biomedical Sciences

MGM School of Biomedical Sciences is formed under the aegis of MGM IHS with the vision of offering basic Allied Science and Medical courses for students who aspire to pursue their career in the Allied Health Sciences, teaching as well as research.

School of Biomedical Sciences is dedicated to the providing the highest quality education in basic medical sciences by offering a dynamic study environment with well-equipped labs. The school encompasses 23 courses each with its own distinct, specialized body of knowledge and skill. This includes 8 UG courses and 15 PG courses. The college at its growing years started with mere 100 students has recorded exponential growth and is now a full-fledged educational and research institution with the student strength reaching approximately **800** at present.

Our consistent theme throughout is to encourage students to become engaged, be active learners and to promote medical research so that ultimately they acquire knowledge, skills, and understanding so as to provide well qualified and trained professionals in Allied Health Sciences to improve the quality of life.

As there is increased need to deliver high quality, timely and easily accessible patient care system the collaborative efforts among physicians, nurses and allied health providers become ever more essential for an effective patient care. Thus the role of allied health professionals in ever-evolving medical system is very important in providing high-quality patient care.

Last but by no means least, School of Biomedical Sciences envisions to continuously grow and reform. Reforms are essential to any growing institution as it fulfills our bold aspirations of providing the best for the students, for us to serve long into the future and to get ourselves up dated to changing and evolving trends in the health care systems.

Name of the Degree: M.Sc. Operation Theatre & Anesthesia Technology

Duration of Study:

The duration of the study for M.Sc. Operation Theatre & Anesthesia Technology will of 2 years.

Eligibility Criteria:

Candidate should be minimum B.Sc. Operation Theater & Anesthesia Technology/ B.Sc. Anesthesia & Critical Care Technology / B.Sc. Operation Theater Technology with minimum 50% marks in qualified examination.

Medium of Instruction:

English shall be the Medium of Instruction for all the Subjects of study and for examinations.

For any query visit the website: www.mgmsbsnm.edu.in/www.mgmuhs.com

M.Sc. Operation Theatre & Anesthesia Technology

Program Outcomes (PO)

Program Code	Program Outcome
PO1	Nurture the scientific and/or clinical knowledge and skills for development of industrial applications, health care practices and entrepreneurship.
PO2	Develop the ability of critical thinking to analyze, interpret problems and to find out systematic approach for solution.
PO3	Impart decision making capability for handling various circumstances in their respective areas
PO4	Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community.
PO5	Develop an ability to function as an efficient individual and team player in multidisciplinary sectors for effective outcomes
PO6	Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries, academia and research.
PO7	Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research in respective areas of specialization
PO8	Develop lifelong learning attitude and values for enhancement of professional and social skills for an overall development

Program Specific Outcome (PO)

Program Code	Program Outcome
PO1	Students will be competent to work in Hospital Operation Theatres, Critical Care Units and Emergency sections.
PO2	Students will be skilled in problem solving, critical thinking and will be able to assist the Surgeon or Anesthetist.
PO3	The students will acquire in-depth knowledge of Anesthesia, Surgery, Critical care pain Management.
PO4	Students will be able to have all the relevant knowledge of Anesthesia & Surgery and will be able to do various procedures required.
PO5	This Program will create a great source of manpower which can aid in our health sector especially in Trauma, Emergency, ICU & Operation Theatres.
PO6	Students will be able to explore new areas of research in both Anesthesia & Surgery and can also go for research as well.
PO7	Students will be able to integrate knowledge of various types of Surgical Procedures & Anesthetic procedures along with their in-depth knowledge.

Learning Objective

Sr. No.	Learning Objective
At the end of completion of M.Sc. OTAT student shall achieve following skills	
1	Students shall learn and work as a link between OT Sisters and Doctor in OT.
2	Learn to prepare the OT prior to surgery, including anaesthesia preparation and Surgical Preparation.
3	Shall be trained in sterilization of OT and instruments.
4	Learn to prepare the OT prior to surgery, including anaesthesia preparation and Surgical Preparation.
5	Shall be trained in sterilization of OT and instruments.
6	Assist the Anaesthetist in delivering General anaesthesia and Regional anaesthesia.
7	Assist in common Surgeries as second SOS first assistant in emergency.
8	Shall be trained in performing basic nursing procedures like IV Catheterization, RT insertion, Nebulisation, Oxygen therapy, Injections.
9	Shall be trained in monitoring of the patient in pre-op and post-op room.
10	Shall be trained in Cardio-pulmonary resuscitation.
11	Shall be trained in use a defibrillator correctly during Cardio-pulmonary resuscitation.
12	Shall be trained in use of basic monitors, equipment's and C-arm in OT.
13	Shall be informed regarding maintenance of basic monitors, equipment's and C-arm in OT including sterilization of endoscopes.
14	Shall be trained in maintenance of all OT records in a proper way.
15	Shall be trained in Blood transfusion therapy.
16	Shall be trained in monitoring of the patient during Blood transfusion.
17	Shall be trained in monitoring of parameters as per check list before & after surgery.
18	Shall be trained in communication skills to provide psychological support to the patient.
19	Shall be trained in counselling patients' relatives.
20	Shall be trained in management of common accidents and untoward incidences in OT.
21	Shall be trained in managing the Arthroscopy unit.

22	Shall be trained in performing different injection techniques commonly used in OT.
23	Shall be trained in checking availability of emergency drugs in emergency tray in the OT.
24	Shall be trained in taking BP and Pulse of patients.
25	Shall be trained in verifying IPD papers for Preoperative preparation NBM status and consent for surgical procedure.
26	Shall be trained in preparation of dressing pads, swabs and packs.
27	Shall be trained in packing of drums for sterilization.
28	Shall be trained in observation of patient during surgery and postoperative period.
29	Shall be trained in segregation of biomedical waste.
30	Shall be trained in preparation of electric gadgets such as Laparoscope, cautery etc.
31	Shall be trained in monitoring of Central suction, electric suction machines and foot suction machines.
32	Shall be trained in Checking whether OT lists are signed by authorities.
33	Shall be trained in ensuring availability of anaesthesia disposables such as ETT, Tracheostomy tray, airways, laryngoscopes with all blades, connectors, styles, spinal and epidural tray, defibrillators, ventilators etc.
34	Shall be trained in ensuring availability of IV anaesthetics such as Thiopentone, propofol, ketamine and muscle Relaxants such as suxamethonium, pancuronium, atracurium, vecuronium. Local anaesthetics such as lignocaine, Bupivacaine etc.
35	Shall be trained in colour coding of various types of cylinders.
36	Shall be trained in monitoring of central oxygen system, manifolds, liquid oxygen, and measurement of pressures in Oxygen cylinders.
37	Shall be trained in use of fire extinguishers.
38	Shall be trained in various positions of operation table and their indications.
39	Shall be trained in inventories of various OT equipment's, instruments, consumables and disposables including indents, opening and closing balances.
40	Shall be trained in technical work as well as paper work equally.

Semester I

MOTAT 101 T	Applied Anatomy & Physiology	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain the structure and function of the human body in relation to healthcare practices.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Theory exam, Practical exam, Viva-voce, Seminar
CO2	Analyze physiological mechanisms and their relevance to clinical applications.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Theory exam, Practical exam, Viva-voce, Seminar
CO3	Apply anatomical and physiological concepts to patient care and medical procedures.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Theory exam, Viva-voce, Seminar, Log Book, Case-study
MOTAT 102 T	Pre-operative Assessment & Optimizations Strategies	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Identify key pre-operative assessment parameters to ensure patient safety.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, Role-Play, Videos	Theory exam, Viva voce, Seminar, Skill assessment, Case-study presentation
CO2	Analyze risk factors and develop optimization strategies for surgical interventions.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Group Discussion, Problem-Based Learning (PBL)	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Demonstrate decision-making skills in managing pre-operative patient conditions.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Group Discussion, Seminar, Workshops, Demonstration	Practical Exam, Station Exercise, Log book, Seminar Presentation, Skill assessment
MOTAT 103 T	Surgical Equipments & Technology	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Describe the working principles of various surgical instruments and technologies.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Experiential, Industrial visit	Theory Exam, Practical Exam, Assignment, Skill assessment
CO2	Demonstrate safe handling and maintenance of surgical equipment.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Experiential, Industrial visit	Theory Exam, Practical Exam, Assignment, Skill assessment
CO3	Apply knowledge of surgical technology in clinical and emergency settings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Experiential, Industrial visit	Theory Exam, Practical Exam, Assignment, Skill assessment

CC 001 T	Research Methodology & Biostatistics (Core Course)	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Understand the fundamentals of research methodology and biostatistics.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, E-Learning, workshops	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Apply statistical tools to analyze healthcare data and interpret research findings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, E-Learning, workshops	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Develop research proposals addressing healthcare challenges.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, E-Learning, workshops	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
MOTAT 104 P	Pre-operative Assessment & Optimisation Strategies	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Identify key pre-operative assessment parameters to ensure patient safety.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, Assignment,	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Journal
CO2	Analyze risk factors and develop optimization strategies for surgical interventions.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, Assignment	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Journal
CO3	Demonstrate decision-making skills in managing pre-operative patient conditions.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, Assignment	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Journal
MOTAT 105 P	Surgical Equipments & Technology	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Describe the working principles of various surgical instruments and technologies.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, , Industrial Visit, Assignment	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Journal
CO2	Demonstrate safe handling and maintenance of surgical equipment.	PO1, PO2, PO3, PO4, PO5, PO6,	Lecture, Practical, Demonstration, , Industrial Visit,	Internal Exam, University Exam, (Theory Exam)

		PO7, PO8	Assignment	Seminar, Station Exercise / OSCE Assignment, Journal
CO3	Apply knowledge of surgical technology in clinical and emergency settings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, , Industrial Visit, Assignment	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Journal
MOTAT 106 CP	MOTAT Directed Clinical Education - I	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Demonstrate fundamental skills in OT and anesthesia procedures.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Practical, Flip Classroom, Problem-Based Learning (PBL)	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Log book
CO2	Assist in preoperative and intraoperative patient care.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Experiential, Workshops	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Apply infection control and sterilization protocols in clinical settings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Experiential, Workshops	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CC 001 P	Research Methodology & Biostatistics	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Understand the fundamentals of research methodology and biostatistics.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, E-Learning, workshops	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Apply statistical tools to analyze healthcare data and interpret research findings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, E-Learning, workshops	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Develop research proposals addressing healthcare challenges.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, E-Learning, workshops	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment

SEMESTER II

MOTAT 107 T	Anaesthetic Equipments & Procedures	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain the principles and functioning of anaesthetic equipment.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz, Flip classroom	Theory exam, Practical exam, Viva-voce, Seminar
CO2	Demonstrate proper handling and maintenance of anaesthetic devices.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, PBL, Assignment	Theory exam, Viva-voce, Seminar, Log Book
CO3	Apply anaesthesia techniques based on clinical requirements.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Group Discussion	Theory exam, Viva-voce, Seminar, Log Book, Case-study
MOTAT 108 T	Advanced Anaesthesia Techniques	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Understand advanced anaesthesia techniques for different surgical procedures.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Analyze patient responses and modify anesthetic plans accordingly.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Workshops, Case-Study, Lecture, Practical, Demonstration	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Demonstrate proficiency in administering specialized anaesthesia methods.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Workshops, Case-Study, Lecture, Practical, Demonstration	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
MOTAT 109 T	Concept of Disease In Relation To Anesthesia & Critical Care	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain the pathophysiology of critical illnesses and their impact on patient management.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Problem Based learning, Group Discussion, Practical	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Analyze clinical conditions requiring critical care interventions.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Problem Based learning, Group Discussion, Practical	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Demonstrate decision-making skills in managing critically ill patients.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Problem Based learning, Group Discussion, Practical	Internal Exam, University Exam, (Theory Exam) Seminar,

				Assignment
MOTAT 110 P	Anaesthetic Equipments & Procedures	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain the principles and functioning of anaesthetic equipment.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Experiential, Industrial visit, Problem-Based Learning (PBL), Experiential	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE journal
CO2	Demonstrate proper handling and maintenance of anaesthetic devices.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Experiential, Industrial visit, Problem-Based Learning (PBL), Experiential	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE journal
CO3	Apply anaesthesia techniques based on clinical requirements.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Experiential, Industrial visit, Problem-Based Learning (PBL), Experiential	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE journal
MOTAT 111 P	Concept of Disease In Relation To Anesthesia & Critical Care	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain the pathophysiology of critical illnesses and their impact on patient management.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lectures, Guest Lecture, Case Study, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE journal
CO2	Analyze clinical conditions requiring critical care interventions.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lectures, Guest Lecture, Case Study, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE journal
CO3	Demonstrate decision-making skills in managing critically ill patients.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lectures, Guest Lecture, Case Study, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE journal
MOTAT 112 CP	MOTAT Directed Clinical Education - II	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Manage anesthesia and surgical equipment effectively.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Experiential, Industrial visit, Problem-Based Learning (PBL), Experiential	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Log book

CO2	Assist in advanced anesthesia and OT procedures.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Experiential, Industrial visit, Problem-Based Learning (PBL), Experiential	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Log book
CO3	Evaluate and respond to critical situations in the operation theatre.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Experiential, Industrial visit, Problem-Based Learning (PBL), Experiential	Internal Exam, University Exam, (Theory Exam) Seminar, Station Exercise / OSCE Assignment, Log book
SEC 001 T	Innovation and Entrepreneurship	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Develop an entrepreneurial mindset in the healthcare sector.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Guest lecture, Industrial visit, Group Discussion, Internship	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Apply innovation strategies to improve medical practices and patient care.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Guest lecture, Industrial visit, Group Discussion, Internship	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Demonstrate business planning and problem-solving skills in healthcare startups.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Guest lecture, Industrial visit, Group Discussion, Internship	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment

OUTLINE OF COURSE CURRICULUM														
M.Sc. Operation Theatre and Anaesthesia Technology														
Semester I														
Code No.	Core Course	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/Rotation (CP)	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/Rotation (CP)	Total (hrs.)	Internal Assement (IA)	Semester End Exam (SEE)	Total
Discipline Specific Core Theory														
MOTAT 101 T	Applied Anatomy & Physiology	3	-	-	-	3	45	-	-	-	45	20	80	100
MOTAT 102 T	Pre-operative Assessment & Optimisation Strategies	3	-	-	-	3	45	-	-	-	45	20	80	100
MOTAT 103 T	Surgical Equipments & Technology	3	-	-	-	3	45	-	-	-	45	20	80	100
CC 001 T	Research Methodology & Biostatistics (Core Course)	3	-	-	-	3	45	-	-	-	45	-	50	50
Discipline Specific Core Practical														
MOTAT 104 P	Pre-operative Assessment & Optimisation Strategies	-	-	4	-	2	-	-	60	-	60	10	40	50
MOTAT 105 P	Surgical Equipments & Technology	-	-	2	-	1	-	-	30	-	30	10	40	50
MOTAT 106 CP	MOTAT Directed Clinical Education-I	-	-	-	12	4	-	-	-	180	180	-	50	50
CC 001 P	Research Methodology & Biostatistics (Core Course)	-	-	4	-	2	-	-	60	-	60	-	50	50
Total		12	0	10	12	21	180	0	150	180	510	80	470	550

Resolution No. 5.8 of Academic Council (AC-52/2025)

The Academic Council resolved to approve the continuation of SWAYAM/NPTEL elective courses for postgraduate students, wherever applicable to their respective programmes. Accordingly, students admitted from the Academic Year 2025-26 onwards shall be permitted to choose any one approved elective course. The Council further approved the inclusion of 2 and 3 credit courses in the index. This approach is in alignment with the current NCAHP curriculum guidelines, which recommend flexibility for open electives through recognized national platforms.

Accordingly, the names of individual elective courses shall be removed from the existing syllabi. The links of SWAYAM/NPTEL courses (https://swayam.gov.in/nc_details/NPTEL) shall be incorporated in the syllabus index under the existing course code SEC-002 T, titled: "NPTEL/SWAYAM (Name of the Course Chosen by the Student)"

In alignment with Resolution No. 3.1 of the Academic Council (AC-51/2025), the detailed syllabi of individual courses shall be removed and replaced with the approved links of SWAYAM/NPTEL or common reference pool courses. The complete course content shall remain accessible on the official SWAYAM/NPTEL portals. Students may select any one course from the provided links, in alignment with the credit requirements mentioned in their respective syllabi, as per Annexures 24A, 24B, 24C, 24D, 24E, 24F, 24G, 24H, 24I, 24J, 24K, 24L, 24M, 24N, and 24O.

OUTLINE OF COURSE CURRICULUM**M.Sc. Operation Theatre and Anaesthesia Technology****Semester II**

Code No.	Core Course	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/Rotation (CP)	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/Rotation (CP)	Total (hrs.)	Internal Assement (IA)	Semester End Exam (SEE)	Total
Discipline Specific Core Theory														
MOTAT 107 T	Anaesthetic Equipments & Procedures	3	-	-	-	3	45	-	-	-	45	20	80	100
MOTAT 108 T	Advance Anesthesia Techniques	3	-	-	-	3	45	-	-	-	45	20	80	100
MOTAT 109 T	Concept of Disease In Relation To Anesthesia And Critical Care	3	-	-	-	3	45	-	-	-	45	20	80	100
Discipline Specific Core Practical														
MOTAT 110 P	Anaesthetic Equipments & Procedures	-	-	2	-	1	-	-	30	-	30	10	40	50
MOTAT 111 P	Concept of Disease In Relation To Anesthesia And Critical Care	-	-	2	-	1	-	-	30	-	30	10	40	50
MOTAT 112 CP	MOTAT Directed Clinical Education-II	-	-	-	18	6	-	-	-	270	270	-	50	50
Skill Enhancement Course														
SEC 001 T	Innovation and Entrepreneurship	3	-	-	-	3	45	-	-	-	45	-	100	100
SEC 002 T	NPTEL Swayam (Course Selected as per Below List)													
Total		12	0	4	18	20	180	0	60	270	510	80	470	550

Common Pool of Swayam/NPTEL Courses offered as elective option (SEC 002)

Course ID	Discipline	Course Name	Institute	Duration	Start date	End date	Exam date	Enrollment End date	Exam Registration End date	UG/PG	Click here to Join the course	NPTEL URL	NPTEL ID
noc25-bt06	Biotechnology and Bioengineering	BioInformatics: Algorithms and Applications	IIT Madras	12 Weeks	20-01-2025	11-04-2025	26-04-2025	27-01-2025	28-02-2025	UG/PG	https://onlinecourses.nptel.ac.in/noc25_bt06/preview	https://nptel.ac.in/courses/102106065	https://nptel.ac.in/courses/102106065
noc25-bt13	Biotechnology and Bioengineering	Computational Genomics	IISER Bhopal	12 Weeks	20-01-2025	11-04-2025	27-04-2025	27-01-2025	28-02-2025	PG	https://onlinecourses.nptel.ac.in/noc25_bt13/preview	https://nptel.ac.in/courses/102106339	https://nptel.ac.in/courses/102106339
noc25-bt29	Biotechnology and Bioengineering	Maternal Infant Young Child Nutrition	IIT Bombay	12 Weeks	20-01-2025	11-04-2025	26-04-2025	27-01-2025	28-02-2025	UG/PG	https://onlinecourses.nptel.ac.in/noc25_bt29/preview	https://nptel.ac.in/courses/102101091	https://nptel.ac.in/courses/102101091
noc25-ge05	Multidisciplinary	Biophotonics	IIT Kharagpur	12 Weeks	20-01-2025	11-04-2025	03-05-2025	27-01-2025	28-02-2025	PG	https://onlinecourses.nptel.ac.in/noc25_ge05/preview	https://nptel.ac.in/courses/127105225	https://nptel.ac.in/courses/127105225
noc25-ge07	Multidisciplinary	Comprehensive Molecular Diagnostics and Advanced Gene Expression Analysis	IIT Kharagpur	12 Weeks	20-01-2025	11-04-2025	03-05-2025	27-01-2025	28-02-2025	UG/PG	https://onlinecourses.nptel.ac.in/noc25_ge07/preview	https://nptel.ac.in/courses/127105391	https://nptel.ac.in/courses/127105391
noc25-ge25	Multidisciplinary	One Health	ICMR - Regional Medical Research Centre, Bhubaneswar	12 Weeks	20-01-2025	11-04-2025	03-05-2025	27-01-2025	28-02-2025	PG	https://onlinecourses.nptel.ac.in/noc25_ge25/preview	https://nptel.ac.in/courses/127106233	https://nptel.ac.in/courses/127106233
noc25-ge27	Multidisciplinary	Qualitative Research Methods and Research Writing	IIT Kharagpur	12 Weeks	20-01-2025	11-04-2025	27-04-2025	27-01-2025	28-02-2025	PG	https://onlinecourses.nptel.ac.in/noc25_ge27/preview	https://nptel.ac.in/courses/109105115	https://nptel.ac.in/courses/109105115
noc25-bt21	Biotechnology and Bioengineering	Host-Pathogen Interaction (Immunology)	IISER Bhopal	12 Weeks	20-01-2025	11-04-2025	04-05-2025	27-01-2025	28-02-2025	PG	https://onlinecourses.nptel.ac.in/noc25_bt21/preview	https://onlinecourses.nptel.ac.in/noc24_bt24/preview	https://onlinecourses.nptel.ac.in/noc24_bt24/preview
noc25-bt22	Biotechnology and Bioengineering	Human Physiology	IISER Pune	12 Weeks	20-01-2025	11-04-2025	26-04-2025	27-01-2025	28-02-2025	PG	https://onlinecourses.nptel.ac.in/noc25_bt22/preview	https://onlinecourses.nptel.ac.in/noc24_bt05/preview	https://onlinecourses.nptel.ac.in/noc24_bt05/preview
noc25-hs61	Humanities and Social Sciences	Patent Law for Engineers and Scientists	IIT Madras	12 Weeks	20-01-2025	11-04-2025	03-05-2025	27-01-2025	28-02-2025	UG/PG	https://onlinecourses.nptel.ac.in/noc25_hs61/preview	https://onlinecourses.nptel.ac.in/noc24_hs155/preview	https://onlinecourses.nptel.ac.in/noc24_hs155/preview
noc25-mg05	Management	AI in Human Resource Management	IIT Guwahati	12 Weeks	20-01-2025	11-04-2025	04-05-2025	27-01-2025	28-02-2025	PG	https://onlinecourses.nptel.ac.in/noc25_mg05/preview	https://nptel.ac.in/courses/110103626	https://nptel.ac.in/courses/110103626
noc25-hs70	Humanities and Social Sciences	Science Communication: Research Productivity and Data Analytics using Open Source Software	IIT Delhi	12 Weeks	20-01-2025	11-04-2025	03-05-2025	27-01-2025	28-02-2025	PG	https://onlinecourses.nptel.ac.in/noc25_hs70/preview	https://nptel.ac.in/courses/109102392	https://nptel.ac.in/courses/109102392
noc25-ag04	Agricultural and Food Engineering	Food Science and Technology	IIT Kharagpur	12 Weeks	20-01-2025	11-04-2025	26-04-2025	27-01-2025	28-02-2025	UG/PG	https://onlinecourses.nptel.ac.in/noc25_ag04/preview		

FIRST YEAR**M.Sc. OPERATION THEATRE & ANESTHESIA TECHNOLOGY****SEMESTER-I**

Code No.	Core Subjects
Discipline Specific Core Theory	
MOTAT 101 T	Applied Anatomy & Physiology
MOTAT 102 T	Pre-operative Assessment & Optimisation Strategies
MOTAT 103 T	Surgical Equipments & Technology
CC 001 T	Research Methodology & Biostatistics (Core Course)
Discipline Specific Core Practical	
MOTAT 104 P	Pre-operative Assessment & Optimisation Strategies
MOTAT 105 P	Surgical Equipments & Technology
MOTAT 106 CP	MOTAT Directed Clinical Education - I
CC 001 P	Research Methodology & Biostatistics (Core Course)

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester I
Name of the Course	Applied Anatomy & Physiology
Course Code	MOTAT 101 T

Learning Outcome	<ul style="list-style-type: none"> • Provide foundational knowledge of human anatomy and physiology relevant to surgical procedures. • Explain physiological responses to anesthesia and surgical interventions. • Enhance understanding of body systems and their clinical applications.
Course Outcomes	<ul style="list-style-type: none"> • Explain the structure and function of the human body in relation to healthcare practices. • Analyse physiological mechanisms and their relevance to clinical applications. • Apply anatomical and physiological concepts to patient care and medical procedures.

Sr. No	TOPICS	No. of Hrs.
1	RESPIRATORY SYSTEM Nose - Role in humidification, Pharynx - Obstruction in airways. Larynx - Movement or vocal cords, Cord palsies. Trachea & Bronchial tree - vessels, nerve supply, respiratory tract, reflexes, and bronchospasm. Alveoli - Layers, Surfactants Respiratory Physiology Control or breathing Respiratory muscles - diaphragm, intercostals.	9
2	LUNG VOLUMES Dead space, vital capacity, FRC , Pulmonary Function Tests Pleural cavity - intrapleural pressure, pneumothorax Work of breathing - airway resistance, compliance, Respiratory movements under anesthesia. Tracheal tug - signs, hiccup Pulmonary Gas Exchange and Acid Base Status Pulmonary circulation-Pulmonary oedema, pulmonary hypertension	9
3	CARDIOVASCULAR SYSTEM Anatomy - Chambers of the heart, major vasculature. Coronary supply Conduction system of Heart. Cardiac output - determinants, heart rate, preload, after load. Coronary blood flow & myocardial oxygen supply ECG – Arrhythmias-Tachycardia and Bradycardia. Blood Pressure & tissue perfusion, Pulse pressure Myocardial infarction	8
4	NERVOUS SYSTEM Organization of nervous system, Neuron, Classification and properties of nerve fiber, electrophysiology. Neuromuscular Junction: Action potential, nerve impulse, receptors, synapse, neurotransmitters. Action of Muscle Relaxants on Neuromuscular Junction. Autonomic Nervous System- Sympathetic and Parasympathetic Nervous system Brain, Spinal cord, CSF, Brain Stem	9

	Cranial Nerves	
5	Hepatic system Anatomy of Liver, Lobes and Blood Supply Functions of Liver, Functional division of Liver Histology- Liver Lobules Pressure Flow Autoregulation	6
6	Renal System Structure and Function of Kidney, Nephron, Juxtaglomerular Apparatus Renal Circulation	4
Total		45 hrs

Reference:

- Anatomy and Physiology by Pears, JP Brothers
- Anatomy and Physiology by Sears, ELBS

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester I
Name of the Course	Pre-operative Assessment & Optimisation Strategies
Course Code	MOTAT 102 T

Learning Outcome	<ul style="list-style-type: none"> • Train students in systematic preoperative patient evaluation. • Develop decision-making skills for optimizing patient conditions before surgery. • Familiarize students with risk assessment and patient preparation protocols.
Course Outcomes	<ul style="list-style-type: none"> • Identify key pre-operative assessment parameters to ensure patient safety. • Analyse risk factors and develop optimization strategies for surgical interventions. • Demonstrate decision-making skills in managing pre-operative patient conditions.

Sr. No	Topics	No. of Hrs.
1	<p>Preoperative Preparation History Taking - Chief complaints, present illness, Past history, Personal history, Family history, Birth history, immunization. Medications therapies, Allergy, Occupation, Social status, Previous Surgeries & Anesthesia. Deep breathing exercises- Exercises, physiotherapy, Chest physiopostural drainage. Weight reduction, Counseling soft surgical diet, Bowel preparation. Medications- Drugs to be discontinued/ stopped, Drugs to be continued. Oral & dental hygiene.</p>	8
2	<p>ASA grading, its interpretation and importance. Airway assessment - Mallampatti, Wilson, IDL, Cormack and Lehane, thyromental, interinusm gap, anterior mandibular protusion, cervical spine extension, sternomental distance.</p>	4
3	<p>Routine investigations- Routine tests & their importance. Hemogram, Urine routine and microscopic, Blood sugar, Hematocrit, Serum lectrolytes.</p>	4
4	<p>Cardiac fitness indices- Goldman Parsonnet, cardiac risk factors, NYHA, METs, Charlson's comorbidity index. Patient with cardiac diseases- - 3D Echo, 12 Lead EKG, stress test Thallium, coronary angio, CT angio, transeosophageal echo, CT thorax, arterial blood gas, cardiac catheterization, cardiac markers, lipid profile.</p>	4
5	<p>Neurological Assessment - Glasgow coma scale. Patient with neurological diseases. X-Ray skull, CT/ MRI brain, CSF studies.</p>	4
6	<p>Respiratory predictors- smoking, increasing age, increasing BMI. Respiratory diseases- Chest X-Ray, CT/ MRI thorax, Spirometry, arterial blood gases, sputum studies, fluoroscopy, tracheobronchoscopy, flow volume loops.</p>	4
7	<p>Patient with liver diseases- Child's criteria, Puglis modification. Liver Function Test, USG abdomen, ascetic fluid studies INR</p>	5

8	Patient with kidney diseases – Kidney Function Test, 5 stages of failure depending on GFR. Urine analysis, x-ray kidney, ureter, bladder, CT&MRI- kidney, ureter, bladder, USG kidney, ureter, bladder.	6
9	Trauma - Shock grades, RTS.	3
10	MEWS- Modified Early Warning Score Emergency Nature	3
Total		45 hrs

MOTAT 104 P: Pre-operative Assessment & Optimisation Strategies

Sr. No.	Topics	No. of Hrs.
1	History Taking - Chief complaints, present illness, Past history, Personal history, Family history, Birth history, immunization. Medications therapies, Allergy, Occupation, Social status, Previous Surgeries & Anesthesia.	60
2	ASA grading, its interpretation and importance. Airway assessment - Mallampatti, Wilson, IDL, Cormack and Lehane, thyromental, interincisum gap, anterior mandibular protrusion, cervical spine extension, sternomental distance.	
3	Routine investigations- Routine tests & their importance. Hemogram, Urine routine and microscopic, Blood sugar, Hematocrit, Serum electrolytes.	
4	Cardiac Fitness Index - Goldman Parsonnet, cardiac risk factors, NYHA, METs, Charlson's comorbidity index. Patient with cardiac diseases - 3D Echo, 12 Lead EKG, stress test Thallium, coronary angiogram, CT angiogram, transeosophageal echo, CT thorax, arterial blood gas, cardiac catheterization, cardiac markers, lipid profile	
5	Neurological Assessment - Glasgow coma scale. Patient with neurological diseases. X-Ray skull, CT/ MRI brain, CSF studies	
Total		60 hrs

Reference:

- Lee's synopsis
- Short text book of anesthesia

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester I
Name of the Course	Surgical Equipments & Technology
Course Code	MOTAT 103 T

Learning Outcome	<ul style="list-style-type: none"> • Introduce students to various surgical instruments and their functions. • Train in the safe handling and maintenance of surgical and anesthesia equipment. • Ensure understanding of sterilization techniques and safety compliance.
Course Outcomes	<ul style="list-style-type: none"> • Describe the working principles of various surgical instruments and technologies. • Demonstrate safe handling and maintenance of surgical equipment. • Apply knowledge of surgical technology in clinical and emergency settings.

Sr. No.	Topics	No. of Hrs.
1	Principle of Surgical equipments and their uses; Members of surgical team; Role of operation theatre technician; Various techniques of incisions; scrubbing technique; Preparation of O.T. room; cleaning and sterilization of operating room; Care and maintenance of surgical equipments.	8
2	General surgical procedures and instruments, preparation of operation theatre; care of surgical patients; transportation of surgical patient, size of operating room and ventilation, Cleaning of O.T., preparation of surgical instruments trolley	8
3	Preparation of laparoscopic instruments; cleaning and care of laparoscopic instruments; Incision and its types, instruments used for general surgery, orthopedic surgical instruments, Gynecology procedure instruments major abdominal incision, minor surgical procedure instruments.	8
4	Operating tables; Suction machine; Diathermy machine; microscopes; Operating lights; Operating trolleys.	5
5	Cleaning and care of wound; Dressing materials; different types of Dressings; different types of disinfectants, dressing procedure, Positioning and its Types , various types of Suture Materials, Different types of Drains, Catheters, Drip Sets, Bags.	8
6	Types of Operation table and positions, use of Diathermy machine, use of Suction machine, Types of jars, Suction tubes, emergency lights, checking and arranging of instruments on the table, instrument trolleys	8
Total		45 hrs

MOTAT 105 P: Surgical Equipment's & Technology

Sr. No.	Topics	No. of Hrs.
1	Observation & Demonstration of Preparation of OT for surgery.	30
2	Methods of sterilization in OT- Autoclaving, Fumigation Uses of O.T equipments.	
3	Surgical Incision technique.	
4	Suture materials. Suturing Types- Simple, Mattress, Subcuticular etc.	
5	Dressing Procedure Drain Types & Uses. Handling of Instruments.	
Total		30 hrs

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester I
Name of the Course	Research Methodology & Biostatistics (Core Course)
Course Code	CC 001 T

Teaching Objective	<ul style="list-style-type: none"> The course is intended to give an overview of research and statistical models commonly used in medical and bio-medical sciences. The goal is to impart an intuitive, understanding and working knowledge of research designs and statistical analysis. The strategy would be to simplify, analyze the treatment of statistical inference and to focus primarily on how to specify and interpret the outcome of research.
Learning Outcomes	<ul style="list-style-type: none"> Understand the fundamentals of research methodology and biostatistics. Apply statistical tools to analyse healthcare data and interpret research findings. Develop research proposals addressing healthcare challenges.

Sr. No.	Topic	No. of Hrs.
A	Research Methodology:	23
1	Scientific Methods of Research: Definition of Research, Assumptions, Operations and Aims of Scientific Research. Research Process, Significance and Criteria of Good Research, Research Methods versus Methodology	4
2	Research Designs: Observational Studies: Descriptive, explanatory, and exploratory, Experimental Studies: Pre-test design, post-test design, Follow-up or longitudinal design, Cohort Studies, Case – Control Studies, Cross-sectional studies, Intervention studies.	5
3	Sampling Designs: Census and Sample Survey, Need and importance for Sampling, Implications of a Sample Design, Different Types of Sample Designs (Probability sampling and non-probability sampling), Systematic sampling, Stratified sampling, Cluster sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.	5
4	Measurement in research: Measurement Scales, Sources of Error in Measurement,	3
5	Methods of Data Collection: Types of data, Collection of Primary Data, Observation Method, Interview Method	4
6	Research Ethics and plagiarism	2
B	Biostatistics	22
7	Data Presentation: Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, Graph: Bar charts, Histograms, Frequency polygons, scatter plots, line graphs	3
8	Measures of Central Tendency and Dispersion: Mean, Median, Mode, Range, Inter quartile range, variance and Standard Deviation, Coefficient of variation, grouped mean and grouped standard deviation (including merits and demerits).	3
9	Testing of Hypotheses: Definition, Basic Concepts, Procedure for Hypothesis Testing, power of test, Normal distribution, Parametric Tests including Z-test, t-test, and ANOVA	4
10	Chi-square Test: Chi-square as a Non-parametric Test, Applications.	2
11	Measures of Relationship: Correlation and Simple Regression Analysis	3

12	Non-parametric test: Sign test, Wilcoxon signed-Rank Test, Wilcoxon Rank Sum Test: Mann-Whitney U test, Kruskal Walli's test, Friedman's test, and Spearman Rank correlation test.	3
13	Vital Health Statistics: rate, crude rate, age specific rate, Measurement of fertility, Rate, Measures of mortality.	4
Total		45 hrs

CC 001 P–Research Methodology & Biostatistics

Sr. No.	Topics	No. of Hrs.
A	Research Methodology	
1	Research Article Presentation (Seminar)	5
B	Biostatistics	
2	Data Presentation	4
3	Measures of Central Tendency and Dispersion	6
4	Testing of Hypotheses	16
5	Chi-square Test	4
6	Measures of Relationship	6
7	Analysis of Variance	5
8	Non parametric or Distribution-free Tests	8
9	Computer Application Using Statistical Software including SPSS	6
Total		60 hrs

Reference Books:

1. Daniel WW. Biostatistics: A foundation for analysis in the health sciences. 10th ed. Wiley; 2013.
2. Gupta SC, Kapoor VK. Fundamentals of mathematical statistics. Sultan Chand & Sons; 2020 Sep.
3. Kothari CR, Garg G. Research methodology: Methods and techniques. 2019.
4. Mahajan BK. Methods in biostatistics for medical students and research workers. 7th ed. Jaypee Brothers Medical Publishers; 2010.
5. Murthy MN. Sampling theory and methods. Statistical Publishing Society; 1967.
6. Singh YK. Fundamental of research methodology and statistics. New Age International; 2006.

Resolution No. 3.5 of Academic Council (AC-51/2025):

Resolved to approve the submitted list of recommended books for M.Sc. Clinical Nutrition and the course on **Biostatistics and Research Methodology** [ANNEXURE-7].

Annexure-7 of AC-51/2025

Biostatistics & Research Methodology Books List

Subject	Book Name	Author
Biostatistics & Research Methodology	Biostatistics: A Foundation for Analysis in the Health Sciences (10th ed.)	Daniel WW.
	Biostatistical Analysis (5th ed.)	Zar JH.
	Research Methodology: Methods and Techniques	Kothari CR, Garg G.
	Methods in Biostatistics for Medical Students and Research Workers (7th ed.)	Mahajan BK.
	Sampling Theory and Methods	Murthy MN.
	Fundamentals of Research Methodology and Statistics	Singh YK.
	Fundamentals of Biostatistics (8th ed.)	Rosner B.
	An Introduction to Medical Statistics (4th ed.)	Bland M.

MOTAT 106 CP: MOTAT Directed Clinical Education – I

Course Outcomes	<ul style="list-style-type: none">• Demonstrate fundamental skills in OT and anesthesia procedures.• Assist in preoperative and intraoperative patient care.• Apply infection control and sterilization protocols in clinical settings.
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Students will observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients. The students will be introduced to terminologies, equipment and techniques used for preparation and management of the OTAT. **(Total-180 hrs.)**

FIRST YEAR**M.Sc. OPERATION THEATRE & ANESTHESIA TECHNOLOGY****SEMESTER-II**

Code No.	Core Subjects
Discipline Specific Core Theory	
MOTAT 107 T	Anesthetic Equipments & Procedures
MOTAT 108 T	Advanced Anesthesia Techniques
MOTAT 109 T	Concept of Disease In Relation To Anesthesia & Critical Care
Discipline Specific Core Practical	
MOTAT 110 P	Anesthetic Equipments & Procedures
MOTAT 111 P	Concept of Disease In Relation To Anesthesia & Critical Care
MOTAT 112 CP	MOTAT Directed Clinical Education - II
Skill Enhancement Course	
SEC 001 T	Innovation and Entrepreneurship
SEC 002 T	NPTEL Swayam

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester II
Name of the Course	Anesthetic Equipment's & Procedures
Course Code	MOTAT 107 T

Learning Outcome	<ul style="list-style-type: none"> • Familiarize students with anesthesia machines and patient monitoring tools. • Teach safe administration of anesthetic drugs and gases. • Provide hands-on training in airway management techniques.
Course Outcomes	<ul style="list-style-type: none"> • Explain the principles and functioning of anaesthetic equipment. • Demonstrate proper handling and maintenance of anaesthetic devices. • Apply anaesthesia techniques based on clinical requirements.

Sr. No.	Topics	No. of Hrs.
1	Medical Gases and Distribution System <ul style="list-style-type: none"> ▪ Medical gas supply, storage and safety The modern integrated Anesthesia workstation <ul style="list-style-type: none"> ▪ Anaesthesia machine & its components ▪ Fail safe system ▪ Safety check of anaesthesia machine Scavenger system	10
2	Monitoring Equipment <ul style="list-style-type: none"> ▪ Respiratory gas monitoring and minimum alveolar concentration ▪ Equipment's to measure depth of anesthesia <ul style="list-style-type: none"> • Bispectral index • Entropy ▪ Neuromuscular block monitoring equipment's ▪ Cardiac output monitors ▪ Equipment for central neuraxial and regional blocks ▪ Needles ▪ Catheters ▪ Nerve locators ▪ Ultrasound device ▪ Anesthesia equipment for magnetic resonance imaging ▪ How to Interpret X-rays, CT Scan, and MRI in clinical anaesthesia practice 	15
3	Airway equipments and their accessories <ul style="list-style-type: none"> • Surgical airway equipments • Percutaneous airway equipments • Optical laryngoscopes • Airway introducers • Alternative to intubation 	10

	Equipments for difficult airway	
4	Hemodynamic monitoring <ul style="list-style-type: none"> ▪ Pressure transducers: resonance ▪ Damping ▪ Invasive & non-invasive blood pressure measurement ▪ Oscillometry Pre-use check of anaesthesia equipments Sterilization and maintenance of anaesthesia equipments	10
TOTAL		45 hrs

MOTAT 110 P: ANAESTHETIC EQUIPMENTS & PROCEDURES

Sr. No.	Topics	No. of Hrs.
1	The modern integrated Anaesthesia workstation <ul style="list-style-type: none"> ▪ Anaesthesia machine & its components ▪ Fail safe system ▪ Safety check of anaesthesia machine ▪ Scavenger system 	30
2	Equipment for central neuraxial and regional blocks <ul style="list-style-type: none"> ▪ Needles ▪ Catheters ▪ Nerve locators ▪ Ultrasound device 	
3	Airway equipments and their accessories <ul style="list-style-type: none"> ▪ Surgical airway equipments ▪ Percutaneous airway equipments ▪ Optical laryngoscopes ▪ Airway introducers ▪ Alternative to intubation 	
4	Hemodynamic monitoring <ul style="list-style-type: none"> ▪ Pressure transducers: resonance ▪ Damping ▪ Invasive & non-invasive blood pressure measurement ▪ Oscillometry 	
Total		30 hrs

Reference:

- A practical approach to anesthesia equipment- Jerry A Dorsch & Susan E Dorsch
- Anaesthesia equipment simplified- Gregory Rose & J Thomas Mclarney
- Understanding anaesthetic equipments and procedures A practical approach Dwarakadas K Baheti & Vandana V Laher

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester II
Name of the Course	ADVANCED ANAESTHESIA TECHNIQUES
Course Code	MOTAT 108 T

Learning Outcome	<ul style="list-style-type: none"> • Train students in advanced regional and general anesthesia techniques. • Develop competency in handling anesthetic complications and emergencies. • Ensure an understanding of pharmacological principles in anesthesia.
Course Outcomes	<ul style="list-style-type: none"> • Understand advanced anaesthesia techniques for different surgical procedures. • Analyze patient responses and modify anaesthetic plans accordingly. • Demonstrate proficiency in administering specialized anaesthesia methods.

Sr. No.	Topics	No. of Hrs.
1	Vascular cannulation Central neuraxial blockade <ul style="list-style-type: none"> ▪ Potential benefits of central neuraxial block ▪ Mechanism of action, spread, uptake & elimination ▪ Ultrasound for central neuraxial blockade Peripheral nerve blocks Post anaesthesia care Ultrasound in ICU <ul style="list-style-type: none"> ▪ FAST ▪ Volume assessment ▪ Thoracic ultrasound 	10
2	Review of modern technology in anaesthesia <ul style="list-style-type: none"> ▪ Ultrasound ▪ Fiberoptics ▪ X-ray 	7
3	General anaesthesia <ul style="list-style-type: none"> ▪ Types and techniques ▪ Awareness during anaesthesia ▪ Complications ▪ The long term effects of general anaesthesia ▪ Management of general anaesthesia ▪ Anesthesia and children 	8
4	Emergency anaesthesia guidelines <ul style="list-style-type: none"> ▪ Incidence and risk factor Anaesthetic emergencies <ul style="list-style-type: none"> ▪ Airway emergencies ▪ Anaphylaxis 	20

	<ul style="list-style-type: none">▪ Local anaesthetic toxicity▪ Malignant hyperthermia The principles and conduct of anaesthesia for emergency surgery <ul style="list-style-type: none">▪ Choice of anaesthetic technique▪ Management and protection of the airway including pulmonary aspiration▪ The rapid sequence induction: evolution over time▪ Management of ventilation▪ Maintenance of anaesthesia	
Total		45 hrs

Reference:

- Anaesthesiology updates for postgraduates- Sampa Dutta Gupta
- Text book of anaesthesia for post graduates- T.K. Agasthi
- Step by step practical aspects of emergency anaesthesia- Arun Kumar Paul

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester II
Name of the Course	Concept of Disease In Relation To Anesthesia & Critical Care
Course Code	MOTAT 109 T

Learning Outcome	<ul style="list-style-type: none"> • Explain disease mechanisms affecting anesthesia and critical care management. • Provide training in patient monitoring and life support techniques. • Develop analytical skills for clinical decision-making in critical care scenarios.
Course Outcomes	<ul style="list-style-type: none"> • Explain the pathophysiology of critical illnesses and their impact on patient management. • Analyze clinical conditions requiring critical care interventions. • Demonstrate decision-making skills in managing critically ill patients.

Sr. No.	Topics	No. of Hrs.
1	Mechanical Ventilation	5
2	Respiratory diseases- Asthma, pneumonia, COPD, Restrictive Lungs Disease, respiratory failure.	5
3	Kidney and urinary tract diseases- acute kidney injury, chronic kidney disease, UTI, Dialysis, glomerulonephritis	5
4	Liver and biliary disorders- Viral hepatitis, Alcoholic liver disease, liver failure, Hepatic coma, jaundice, cholecystitis	5
5	Endocrine and Metabolic disorders- diabetes mellitus, thyroid, adrenal, parathyroid disorders. Acid base and electrolytes imbalance	5
6	Neurological Disorders- diagnosis and management of unconscious , coma, head injuries, CVA, critical care and monitoring of patient with neurological illnesses Sepsis and Multi-organ failures –causes, diagnosis and management	7
7	ACID - BASE DISORDERS AND FLUID BALANCE- ABG analysis, Normal ABG value, Crystalloid and colloids: Differences, indications, Monitoring drip rate, Fluid balance: Intake/output chart	6
8	BLOOD TRANSFUSION- Blood Grouping and cross matching, Whole blood, packed RBC, Blood components and indications, Technique of blood transfusion, Complications of Blood Transfusion, Anaphylactic reaction.	7
Total		45 hrs

Reference:

1. Short textbook of anaesthesia
2. Anaesthesia for operation theatre technician.

MOTAT 111 P: Concept of Disease In Relation To Anesthesia & Critical Care

Sr. No.	Topics	No. of Hrs.
1	Mechanical Ventilation	30
2	MONITORING AND DIAGNOSTIC PROCEDURES IN I.C.U. - Clinical Monitoring, ECG monitoring. NIBP Cuff sizes and application Multi parameter monitor – Normal values	
3	GENERAL CARE OF PATIENT IN I.C.U. - Care of unconscious patient Syringe pump / Infusion Pump uses, infusion rate. Physiotherapy - chest physiotherapy, Oxygen Therapy Sources of oxygen, Oxygen Delivery devices, Oxygen Toxicity, Monitoring Hypoxia	
4	ACID - BASE DISORDERS AND FLUID BALANCE- ABG analysis, Normal ABG value, Crystalloid and colloids: Differences, indications, Monitoring drip rate, Fluid balance: Intake/output chart	
Total		30 hrs

Reference:

- Lee's synopsis
- Short text book of anesthesia

MOTAT 112 CP: MOTAT Directed Clinical Education – II

Course Outcomes	<ul style="list-style-type: none">• Manage anesthesia and surgical equipment effectively.• Assist in advanced anesthesia and OT procedures.• Evaluate and respond to critical situations in the operation theatre.
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Students will observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients. The students will be introduced to terminologies, equipment and techniques used for preparation and management of the OT. **(Total-270 hrs.)**

SKILL ENHANCEMENT COURSES

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester II
Name of the Course	Innovation and Entrepreneurship
Course Code	SEC 001 T

Course Outcome	<ul style="list-style-type: none"> • Develop an entrepreneurial mindset in the healthcare sector. • Apply innovation strategies to improve medical practices and patient care. • Demonstrate business planning and problem-solving skills in healthcare startups.
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Sr. No.	Topics	No. of Hrs.
1	Innovation and Innovation Eco-System, The Policy Framework, Startup Landscape and Innovation Hubs, - Digital India and Make in India, - Linking Innovation with Intellectual Property Rights, Raising Finance for Startups in India, Innovation in Indian Context, Writing a business plan	15
2	Creativity and Research, Converting Researches to Innovation: Innovation Types and Models, Product Development, IPR and its Commercialisation, Support System to Develop Culture of Research and Innovation, Commercialisation of research and innovation, Fund raising – Research and Innovation, Envisioning Innovation and Scenario Building	15
3	Introduction to Innovation in Entrepreneurship, Idea Generation and Validation, Design Thinking in Entrepreneurship, Business Model Innovation, Technology and Innovation, Funding Innovation, Entrepreneurial Mindset, Leadership & amp; Intellectual Property, Scaling and Growth Strategies, sustainability & amp; Social Innovation	15
Total		45 hrs

Name of the Program	M.Sc. Operation Theatre and Anaesthesia Technology
Semester	Semester II
Name of the Course	NPTEL Swayam
Course Code	SEC 002 T

Note: The links of SWAYAM/NPTEL courses (https://swayam.gov.in/nc_details/NPTEL)

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester II
Name of the Course	One Health (NPTEL)
Course Code	SEC 002 T

Course Outcomes	<ul style="list-style-type: none"> • Understand the interconnectedness of human, animal, and environmental health in a global context. • Analyze the impact of zoonotic diseases and antimicrobial resistance on public health and ecosystems. • Evaluate policies and strategies for disease prevention and sustainable development within the One Health framework.
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Sr. No.	Topics	No. of Hrs.
1	Introduction to One Health : <ul style="list-style-type: none"> • Introduction to the One Health One Medicine Concept and National & International health/public health agencies • Global Health vs One Health • Basics of Research Ethics • Integrated human and animal disease surveillance systems • Recent success of One Health in control of emerging infectious diseases and the application of One Health in the control of endemic zoonoses in resource-poor communities 	5
2	Emerging Infectious Diseases and Antimicrobia l Resistance: <ul style="list-style-type: none"> • Emerging infectious diseases • Process of disease emergence and assessment of the risk factors • Mechanisms of pathogen cross over across species boundaries and emerging infectious disease transmission, and its relevance in the 21st century • Importance of disease detection, Identification and monitoring in public health and the gaps in current health systems approaches and importance of Genome Sequencing • Introduction to disease vectors and basics of Medical Entomology • The factors influencing an emerging disease (whether is controlled or becomes endemic/epidemic as illustrated by different emerging diseases -STDs, HIV/AIDS, avian influenza, SARS, Ebola) • Antimicrobial resistance a global threat and Importance of antibiotic stewardship program • Introduction of Food Safety and Food Borne Diseases 	10
3	One Health Application in Management of Zoonotic Diseases: <ul style="list-style-type: none"> • What are zoonotic diseases & its role in our changing world • Understanding of bacterial, viral and parasitic zoonotic diseases; critical evaluation of its control measures, awareness of local, national and global factors and Influences • Biogeography of zoonosis 	10

	<ul style="list-style-type: none"> • The integration of human, animal and ecosystem health in the control and prevention of these diseases • Community engagement for zoonotic disease control in humans and animals through One Health 	
4	Applied Epidemiology & Public Health in One Health Research: <ul style="list-style-type: none"> • Basics of Epidemiological Studies • Rapid Response system, Disaster Management and Outbreak Investigation Plans • Basic statistical methods and their application and the measurement of disease frequency • Principles of survey design and the concepts of sampling • Mixed method research 	5
5	One Health and Health Policy: <ul style="list-style-type: none"> • Introduction to health policy • Political and institutional challenges in implementing One Health and the importance of a unified policy to address the shared health threats of humans and animals 	5
6	Media & Community engagement for One Health: <ul style="list-style-type: none"> • Risk Communication and Pandemic Preparedness • How ICMR and other Public Health Institutes tackled and managed pandemic situation in the country • Role of community in disease control & ways for community engagement • Uses of different types of media for communication and impact of the media on public attitudes to disease 	10
Total		45 hrs

***Note:** Attain the NPTEL Course with title and course code as “**One Health (Course Code: noc25-ge25) (NPTEL)**”.

Scheme of University Examination Theory for PG Program:

General structure / patterns for setting up question papers for Theory / Practical courses, their evaluation weightages for PG programs of MGMSBS are given in the following tables

Marks scheme for the University exam:

Final theory marks will be 100 marks (80 marks University Theory exam + 20 Marks Internal assessment).

Question		Marks distribution	Marks allotted per section	Marks
Sec: A	MCQ	10 x 1 M = 10	10	10
Sec: B	SAQ	3/4x 5 M = 15	15	35
Sec: B	LAQ	2/3 x 10 M = 10	20	
Sec: C	SAQ	3/4x 5 M = 15	15	35
Sec: C	LAQ	2/3x 10 M = 10	20	
Total				80 Marks

Marks Scheme for the University Examination (50 Marks)

Final theory marks will be 50 marks University Theory exam pattern Research Methodology & Biostatistics (Core course)

Question	Question No.	Question Type	Marks Distribution	Marks
Sec: A	1.	LAQ (2 out of 3)	2 X 10 Marks = 20	20
Sec: B	2.	SAQ (6 out of 8)	6 X 05 Marks = 30	30
Total				50 Marks

Marks Scheme for the University Examination (100 Marks)

Final theory marks will be 100 marks University Theory exam pattern Elective Course

Question	Question No.	Question Type	Marks Distribution	Marks
Sec: A	1.	LAQ (10 out of 12)	10 X 10 Marks = 100	100
Total				100 Marks

Practical exam pattern: Total 40 marks with following breakup:

Exercise	Description	Marks
Q No 1	Practical exercise - 1	1 x15=15 M
Q No 2	Station exercise	2x5M=10 M
Q No 3	VIVA	10 M
Q No 4	Journal	5M
Total		40 Marks

Practical exam pattern Research Methodology & Biostatistics (Core course)**Total 50-mark distribution:**

Exercise	Description	Marks
Q No 1	Practical/Problem-Solving: These questions can assess statistical analysis, research design, hypothesis testing, or interpretation of data etc	2 × 10 marks each) = 20 marks
Q No 2	Identification of study designs, Critical appraisal of research papers, Application of biostatistical tools, Sampling techniques etc	(4 × 5 marks each) = 20 marks
Q No 3	Viva Voce (Oral Examination) Assessing conceptual clarity, application of research methodology, and statistical reasoning.	10 marks
Total		50 Marks

Practical to be conducted at respective departments and marks submitted jointly by the parent department to the university.

Breakup of theory IA calculation for 20 marks

Description	Marks
Internal exam (at department)	15 marks
Seminar	5 marks
Total	20 Marks

Breakup of practical IA calculation:

Description	Marks
Internal exam (at department)	10 marks
Viva	5 marks
Journal	5 marks
Total	20 Marks

Note –20 marks to be converted to 10 marks weightage for submission to the university.

Model Checklist for Evaluation of the Clinical Directed Posting (PG)

Name of the student: _____ **Date:** _____

Program: _____

Semester: _____ **Name of the Internal faculty/Observer:** _____

Name of the External Faculty/Observer: _____

Core Competencies	Marks allotted	Marks obtained
	Students will begin to develop critical thinking abilities utilizing the allied health personnel roles of communicator and caregiver. Students will learn principles of professional allied health personnel practice and provide direct care to individuals within a medical surgical setting while recognizing the diverse uniqueness of individuals with health alterations.	
Clinical Teaching		
a. Demonstrate beginning competency in technical skills.	10	
Independent Work by Student guided by faculty		
a. Develop effective communication skills (verbally and through charting) with patients, team members, and family	2.5	
b. Identify intra and inter-professional team member roles and scopes of practice. Establish appropriate relationships with team members.	2.5	
Hands on practical work by students		
a. Protect confidentiality of electronic/manual health records data, information, and knowledge of technology in an ethical manner	05	
Independent work by student		
a. Demonstrate expected behaviors and complete tasks in a timely manner. Arrive to clinical experiences at assigned times. Maintain professional behavior and appearance.	05	
Log book	10	
Viva	10	
Attendance	05	
Total	50 Marks	

Sign of Internal Examiner: _____

Sign of External Examiner: _____

Resolution No. 5.1 of Academic Council (AC-52/2025):

Resolved to approve the CBCS syllabus, including Program Outcomes (POs) and Course Outcomes (COs), for Postgraduate (PG) 2-year programs under MGMSBS (semester III & IV) for M.Sc. Medical Biotechnology, M.Sc. Medical Genetics, M.Sc. Clinical Embryology, M.Sc. Clinical Nutrition, M.Sc. Medical Dialysis Technology, M.Sc. Molecular Biology, M.Sc. Medical Radiology & Imaging Technology, M.Sc. Cardiac Care Technology, M.Sc. Operation Theatre and Anaesthesia Technology, M.Sc. Emergency and Trauma Care, M. Optometry, Masters in Hospital Administration, Masters of Public Health, M.Sc. Health Informatics, M.Sc. Medical Laboratory Technology, M.Sc. Clinical Research, to be effective from batch admitted in the Academic Year 2025-26 onwards. Guidelines for selected programmes as per National Commission for Allied & Healthcare Professions will be adopted for the given programmes from academic year 2026-27 onwards [ANNEXURE-17A, 17B, 17C, 17D, 17E, 17F, 17G, 17H, 17I, 17J, 17K, 17L, 17M, 17N, 17O & 17P and ANNEXURE-18A, 18B, 18C, 18D, 18E, 18F, 18G, 18H, 18I, 18J, 18K, 18L, 18M, 18N, 18O & 18P].

Annexure-17I of AC-52/2025**MGM SCHOOL OF BIOMEDICAL SCIENCES****(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)**

(Deemed to be University u/s 3 of UGC Act 1956)

Grade "A⁺⁺" Accredited by NAAC

Sector 1, Kamothe Navi Mumbai-410209, Tel.No.: 022-27437631, 27437632, 27432890

Email. sbsnm@mgmuhs.com/Website: www.mgmsbsnm.edu.in**CHOICE BASED CREDIT SYSTEM (CBCS)****(Academic Year 2025 - 26)****Curriculum for****M.Sc. Allied Health Sciences****M.Sc. Operation Theatre & Anesthesia Technology****Semester III & IV**

COURSE OUTCOME SEMESTER III

MOTAT 113 T	Clinical Surgery- I	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Describe fundamental surgical principles and procedures.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Identify surgical instruments and their applications.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Assist in basic surgical procedures under supervision.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
MOTAT 114 T	Clinical Surgery- II	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain advanced surgical techniques and protocols.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Demonstrate the ability to manage perioperative patient care.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Apply aseptic techniques to prevent surgical infections.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
MOTAT 115 T	Fundamental Concepts and Procedures Related to Operation Theatre	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Understand and implement OT safety protocols.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, Role Play, Videos	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Demonstrate proper sterilization techniques.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, Role Play, Videos	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment

CO3	Manage OT equipment and surgical instruments.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration, Role Play, Videos	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
MOTAT 116	Research Project / Dissertation	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Formulate a research hypothesis relevant to OT and anesthesia.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-study
CO2	Analyze clinical data and present findings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-study
CO3	Demonstrate academic writing and presentation skills.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-study
MOTAT 117 P	Clinical Surgery- I	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Describe fundamental surgical principles and procedures.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration	Internal Assessment, University Exam, Theory exam
CO2	Identify surgical instruments and their applications.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
CO3	Assist in basic surgical procedures under supervision.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
MOTAT 118 P	Clinical Surgery- II	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain advanced surgical techniques and protocols.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
CO2	Demonstrate the ability to manage perioperative patient care.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
CO3	Apply aseptic techniques to prevent surgical infections.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam

MOTAT 119 CP	MOTAT Directed Clinical Education - III	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Apply theoretical knowledge in real-time OT settings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Practical, Clinical Posting, Demonstration, Internship, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce
CO2	Assist in advanced anesthesia and surgical procedures.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Practical, Clinical Posting, Demonstration, Internship, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce
CO3	Develop clinical decision-making skills in high-pressure situations.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Practical, Clinical Posting, Demonstration, Internship, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce

SEMESTER IV

MOTAT 120 T	Procedures in Abdomen, Obstetric, Gynaecology & Urology (OBGY & URO) OT	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain surgical procedures in abdominal and obstetric surgeries.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz, Videos, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Assist in gynecological and urology-related surgeries.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz, Videos, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Demonstrate proficiency in instrument handling during these surgeries.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz, Videos, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
MOTAT 121 T	Procedures in Ear, Nose, Throat (ENT), Ophthalmic & Neuro OT	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Describe procedures in ENT, ophthalmic, and neurosurgeries.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz, Videos, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO2	Assist in specialized surgeries in these domains.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz, Videos, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
CO3	Understand and apply patient positioning and preparation techniques.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Quiz, Videos, Seminar	Internal Exam, University Exam, (Theory Exam) Seminar, Assignment
MOTAT 122 P	Procedures in Abdomen, Obstetric, Gynaecology & Urology (OBGY & URO) OT	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Explain surgical procedures in abdominal and obstetric surgeries.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
CO2	Assist in gynecological and urology-related surgeries.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
CO3	Demonstrate proficiency in instrument handling during these surgeries.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
MOTAT 123 P	Procedures in Ear, Nose, Throat (ENT), Ophthalmic & Neuro OT	Mapped PO	Teaching-Learning Methodology	Assessment Tools

CO1	Describe procedures in ENT, ophthalmic, and neurosurgeries.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
CO2	Assist in specialized surgeries in these domains.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
CO3	Understand and apply patient positioning and preparation techniques.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture, Practical, Demonstration,	Internal Assessment, University Exam, Theory exam
MOTAT 124 CP	MOTAT Directed Clinical Education - IV	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Manage OT workflow efficiently.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Practical, Clinical Posting, Demonstration, Internship, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce
CO2	Apply advanced surgical assisting techniques.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Practical, Clinical Posting, Demonstration, Internship, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce
CO3	Evaluate clinical situations and suggest appropriate interventions.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Practical, Clinical Posting, Demonstration, Internship, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce
MOTAT 116	Research Project / Dissertation	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Formulate a research hypothesis relevant to OT and anesthesia.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration and practical	Seminar, Viva-voce
CO2	Analyze clinical data and present findings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration and practical	Seminar, Viva-voce
CO3	Demonstrate academic writing and presentation skills.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Demonstration and practical	Seminar, Viva-voce

OUTLINE OF COURSE CURRICULUM
M.Sc. Operation Theatre and Anaesthesia Technology

Semester III

Code No.	Core Course	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/Rotation (CP)	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/Rotation (CP)	Total (hrs.)	Internal Assement (IA)	Semester End Exam (SEE)	Total
Discipline Specific Core Theory														
MOTAT 113 T	Clinical Surgery-I	2	-	-	-	2	30	-	-	-	30	20	80	100
MOTAT 114 T	Clinical Surgery-II	3	-	-	-	3	45	-	-	-	45	20	80	100
MOTAT 115 T	Fundamental Concepts and Procedures Related to Operation Theatre	3	-	-	-	3	45	-	-	-	45	20	80	100
MOTAT 116	Research Project / Dissertation	-	-	10	-	5	-	-	-	-	150	50	-	50
Discipline Specific Core Practical														
MOTAT 117 P	Clinical Surgery-I	-	-	2	-	1	-	-	30	-	30	10	40	50
MOTAT 118 P	Clinical Surgery-II	-	-	2	-	1	-	-	30	-	30	10	40	50
MOTAT 119 CP	MOTAT Directed Clinical Education-III	-	-	-	15	5	-	-	-	225	225	-	50	50
Total		8	0	14	15	20	120	0	60	225	555	130	370	500

OUTLINE OF COURSE CURRICULUM

M.Sc. Operation Theatre and Anaesthesia Technology

Semester IV

Code No.	Core Course	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/Rotation (CP)	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/Rotation (CP)	Total (hrs.)	Internal Assement (IA)	Semester End Exam (SEE)	Total
Discipline Specific Core Theory														
MOTAT 120 T	Procedures in Abdomen, Obstetrics, Gynaecology & Urology (OBGY & URO) OT	2	-	-	-	2	30	-	-	-	30	20	80	100
MOTAT 121 T	Procedures in Ear, Nose, Throat (ENT), Ophthalmic & Neuro OT	2	-	-	-	2	30	-	-	-	30	20	80	100
Discipline Specific Core Practical														
MOTAT 122 P	Procedures in Abdomen, Obstetrics, Gynaecology & Urology (OBGY & URO) OT	-	-	2	-	1	-	-	30	-	30	10	40	50
MOTAT 123 P	Procedures in Ear, Nose, Throat (ENT), Ophthalmic & Neuro OT	-	-	2	-	1	-	-	30	-	30	10	40	50
MOTAT 124 CP	MOTAT Directed Clinical Education-IV	-	-	-	9	3	-	-	-	135	135	-	50	50
MOTAT 116	Research Project / Dissertation	-	-	22	-	11	-	-	330	-	330	-	200	200
Total		4	0	26	9	20	60	0	390	135	585	60	490	550

SECOND YEAR

M.Sc. OPERATION THEATRE & ANESTHESIA TECHNOLOGY

SEMESTER-III

Code No.	Core Subjects
Discipline Specific Core Theory	
MOTAT 113 L	Clinical Surgery-I
MOTAT 114 L	Clinical Surgery-II
MOTAT 115 L	Fundamental Concepts and Procedures Related to Operation Theatre
MOTAT 116	Research Project / Dissertation
Discipline Specific Core Practical	
MOTAT 117 P	Clinical Surgery-I
MOTAT 118 P	Clinical Surgery-II
MOTAT 119 CP	MOTAT Directed Clinical Education - III

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester III
Name of the Course	Clinical Surgery I
Course Code	MOTAT 113 T

Teaching Objective	<p>Students should understand:</p> <ul style="list-style-type: none"> • Various sub-specialty surgical procedures • Different requirements for each of these procedures • Preparation of patient, equipment, and operation theatre for these surgical procedures
Course Outcomes	<ul style="list-style-type: none"> • Describe fundamental surgical principles and procedures. • Identify surgical instruments and their applications. • Assist in basic surgical procedures under supervision.

Sr. No.	Title	No. of Hrs.
1.	<p>Laparoscopic Surgery</p> <ul style="list-style-type: none"> ▪ Principles of laparoscopic surgery ▪ Advantages and disadvantages ▪ Safety issues and indications ▪ Postoperative care ▪ Laparoscopic Cholecystectomy ▪ Laparoscopic Appendectomy ▪ Advanced Laparoscopic Surgeries ▪ Diagnostic Laparoscopy 	7
2.	<p>Robotic surgery</p> <ul style="list-style-type: none"> • Principles of robotic surgery • Advantages and disadvantages • Safety issues and indications • Postoperative care 	4
3.	<p>Neck and spine</p> <ul style="list-style-type: none"> • The accurate assessment of spinal cord injuries • The basic management of spinal trauma and major pitfalls 	3
4.	<p>Trauma to the face and mouth</p> <ul style="list-style-type: none"> • Classification of facial fractures • Diagnosis and management of fractures 	2
5.	<p>Elective orthopaedics</p> <p>Pathology, assessment and management of</p> <ul style="list-style-type: none"> • Upper limb • Hip and knee • Foot and ankle • Paediatric orthopaedics 	3
6.	<p>Ophthalmic surgeries</p> <ul style="list-style-type: none"> • Cataract extraction • Corneal transplant/ keratoplasty • Correction of strabismus 	2

7.	ENT surgeries <ul style="list-style-type: none"> • Tympanoplasty • Mastoidectomy • FESS • Rhinoplasty • Tonsillectomy & Adenoidectomy • Tracheostomy • Laryngectomy • Radical Neck Dissection 	5
8.	Obstetrics & Gynaecological Procedures <ul style="list-style-type: none"> • D&C • Hysterectomy • Salphingo oophorectomy • Tubal Sterilization • LSCS • Ectopic pregnancy 	4
Total		30 hrs.

MOTAT 117 P: Clinical Surgery I

Teaching Objective	Students should understand: <ul style="list-style-type: none"> • Various sub-specialty surgical procedures • Different requirements for each of these procedures • Preparation of patient, equipment, and operation theatre for these surgical procedures
Course Outcomes	<ul style="list-style-type: none"> • Describe fundamental surgical principles and procedures. • Identify surgical instruments and their applications. • Assist in basic surgical procedures under supervision..

Sr. No.	Topics	No. of Hrs.
1.	Setting up of Equipment's and preparation of patient for <ul style="list-style-type: none"> • Laparoscopic surgery • Robotic surgery • Neck and spine surgery • Trauma to the face and mouth • Elective Orthopaedic surgery • Ophthalmic surgery • ENT surgeries • Obstetrics and gynaecological procedures 	30
Total		30 hrs.

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester III
Name of the Course	Clinical Surgery II
Course Code	MOTAT 114 T

Teaching Objective	<p>Students should understand:</p> <ul style="list-style-type: none"> • Various sub-specialty surgical procedures • Different requirements for each of these procedures • Preparation of patient, equipment, and operation theatre for these surgical procedures
Course Outcomes	<ul style="list-style-type: none"> • Explain advanced surgical techniques and protocols. • Demonstrate the ability to manage perioperative patient care. • Apply aseptic techniques to prevent surgical infections.

Sr. No.	Title	No. of Hrs.
1.	<p>Elective neurosurgery</p> <ul style="list-style-type: none"> • Head injury • Investigation and treatment for intracranial infection • Treatment for hydrocephalus • Management of intracranial hemorrhage • Management of epilepsy • Understanding the principals involved in brain death 	10
2.	<p>Plastic and reconstructive surgery</p> <ul style="list-style-type: none"> • The spectrum of plastic surgical techniques • The various skin grafts • The principles and use of flaps • Plastic surgery to manage difficult and complex tissue loss 	7
3.	<p>The thorax</p> <ul style="list-style-type: none"> • Investigation of chest pathology • Surgical oncology as applied to chest surgery 	4
4.	<p>Vascular surgery</p> <ul style="list-style-type: none"> • Investigation for vascular surgery • Management technique of vascular surgery • Direct repair by stunting • Endarterectomy • Bypass 	8
5.	<p>Cardiac surgery</p> <ul style="list-style-type: none"> • 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 	8

6.	Organ Transplantation <ul style="list-style-type: none"> • What is organ transplantation • The transplant process • Timeline of medical and legal advances in organ transplantation • Cadaveric organ donation • Living organ donation • Alternative organs • The impact of transplantation 	8
Total		45 hrs.

MOTAT 118 P: Clinical Surgery II

Teaching Objective	Students should understand: <ul style="list-style-type: none"> • Various sub-specialty surgical procedures • Different requirements for each of these procedures • Preparation of patient, equipment, and operation theatre for these surgical procedures
Course Outcomes	<ul style="list-style-type: none"> • Explain advanced surgical techniques and protocols. • Demonstrate the ability to manage perioperative patient care. • Apply aseptic techniques to prevent surgical infections..

Sr. No.	Topics	No. of Hrs.
1.	Setting up of Equipment's and preparation of patient for <ul style="list-style-type: none"> • Elective neurosurgery • Plastic and reconstructive surgery • The thoracic surgery • Vascular surgery • Cardiac surgery • Organ Transplantation 	30
Total		30 hrs.

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester III
Name of the Course	Fundamental Concepts and Procedures Related to Operation Theatre
Course Code	MOTAT 115 T

Teaching Objective	<ul style="list-style-type: none"> To teach students transfer procedures for patients along with the different drug administration To teach students regarding operative record
Course Outcomes	<ul style="list-style-type: none"> Understand and implement OT safety protocols. Demonstrate proper sterilization techniques. Manage OT equipment and surgical instruments.

Sr. No.	Title	No. of Hrs.
1	Admission procedure/ Patient Data: Patient name, age, sex, address, registration no, relatives income, blood group, patient history, examination, provisional diagnosis, investigation, final diagnosis, treatment plan.	4
2	Psychological support of surgical patients: Preoperative patient preparation, orientation, information and psychological support about surgery, postoperative psychological support, recovery period, pain management	4
3	Transfer procedure: Transfer from ward to pre anesthesia room, transferring techniques to operating table, positioning on operating table, special attachments of operation table, pressure points, prevention of injuries	4
4	Environmental controls: Cleaning and disinfection of operation room, corridor, storage room, traffic pattern in O.R, use of barriers, scrubbing techniques, sterilization of instruments, disposal of waste and removal of laundry, protective covering, hand washing procedure, change of clothes, cap, mask, gloves, footwear.	5
5	Operative record: Diagnosis, procedure, specimens, Documentation of illness, catheters etc., vital sign record, Instrument and swab counting procedure, X-ray detectable sponges.	4
6	Safety for operating room personnel: Safety measure policy, body mechanics, proper lifting of patients, instruments, fatigue factors, Radiation safety, intraoperative X-ray, radioactive implant, hospital policy, Radiation exposure, hospital protective measures, chemical hazards, safe levels of anaesthetic gases and their removal, air conditioning system, gas leak detectors, infection control, protective covering.	14
7	Drug administration: Topical administration, skin medication, transdermal and eye medication, instillation of ear drops, external administration, oral and nasogastric tubes, buccal and sublingual drugs, rectal suppositories, parenteral administration	10
Total		45 hrs.

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester III
Name of the Subject	Research Project / Dissertation
Subject Code	MOTAT 116

Teaching Objective	<ul style="list-style-type: none">• To introduce basic concepts of project and hands-on with Quality Assurance in healthcare and university and to train the students.
Course Outcomes	<ul style="list-style-type: none">• Formulate a research hypothesis relevant to OT and anesthesia.• Analyze clinical data and present findings.• Demonstrate academic writing and presentation skills.

*The Dissertation work will begin from 3rd Semester, and will continue through the 4th Semester.(150 hrs.)

Course code- MOTAT 119 CP: MOTAT Directed Clinical Education – III

Teaching Objective	<ul style="list-style-type: none">• Demonstrate the ability to manage operation theatre (OT) workflow efficiently• Apply advanced surgical assisting techniques• Evaluate clinical situations in the OT and suggest suitable interventions
Course Outcomes	<ul style="list-style-type: none">• Apply theoretical knowledge in real-time OT settings.• Assist in advanced anesthesia and surgical procedures.• Develop clinical decision-making skills in high-pressure situations.

Students will observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients. The student will be introduced to terminologies, equipment, and techniques used for preparation and management of the OT. **(Total- 225 hrs.)**

SECOND YEAR**M.Sc. OPERATION THEATRE & ANESTHESIA TECHNOLOGY****SEMESTER- IV**

Code No	Core Subject
Discipline Specific Core Theory	
MOTAT 120 T	Procedures in Abdomen, Obstetrics, Gynaecology & Urology (OBGY & URO) OT
MOTAT 121 T	Procedures in Ear, Nose, Throat (ENT), Ophthalmic & Neuro OT
Discipline Specific Core Practical	
MOTAT 122 P	Procedures in Abdomen, Obstetrics, Gynaecology & Urology (OBGY & URO) OT
MOTAT 123 P	Procedures in Ear, Nose, Throat (ENT), Ophthalmic & Neuro OT
MOTAT 124 CP	MOTAT Directed Clinical Education - IV
MOTAT 116	Research Project / Dissertation

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester IV
Name of the Course	Procedures in Abdomen, Obstetrics, Gynaecology & Urology (OBGY & URO) OT
Course Code	MOTAT 120 T

Teaching Objective	<ul style="list-style-type: none"> To train students in areas like passing nasogastric tubes, changing intravenous fluids, giving different positions on OT table in operative procedures on the abdomen, pelvis & obstetrics-gynecology OT. To train the students on pre-operative procedures, anaesthesia techniques & post-operative patient management in abdominal, obs- gynecology & Urology procedures
Learning Outcomes	<ul style="list-style-type: none"> Explain surgical procedures in abdominal and obstetric surgeries. Assist in gynecological and urology-related surgeries. Demonstrate proficiency in instrument handling during these surgeries.

Sr. No.	Topics	No. of Hrs.
1	Type of patients & presentation: Pain, distension, bleeding, vomiting, GI disturbances, oliguria, anuria, oedema, respiratory insufficiency	4
2	Patient preparation: Bowel preparation, antibiotics, Hydration therapy, diuretic, prokinetics, RT feeds, TPN, Correct electrolyte imbalance	4
3	Investigations: Routine-Hb, CBC, sugar, electro, Specific- X-Ray, CT, MRI, Renal function tests, Blood grouping- X matching, USG abdomen-ECG, X-Ray chest	4
4	Operative procedures: Exploratory laparotomy, Appendicectomy, colectomy resections, nephrectomy, uretero-pyelolithotomy, renal transplant, Hysterectomy, Myomectomy, PCNL, gastrectomy, GJ vagotomy, nephrolithotomy, TURP, open prostatectomy	4
5	Anaesthesia Techniques: Sedations, spinal, epidural, general anesthesia	5
6	Anaesthesia Management: Premedicate anesthetic Agents, positioning, i/v fluids, Transfusions, Monitoring, Management of complications	5
7	Post-operative: Pain relief measures, IV fluids	4
Total		30 hrs.

MOTAT 122 P: Procedures in Abdomen, Obstetrics, Gynecology & Urology (OBGY & URO) OT

Teaching Objective	<ul style="list-style-type: none"> • To train students in areas like passing nasogastric tubes, changing intravenous fluids, giving different positions on OT table in operative procedures on the abdomen, pelvis & obstetrics-gynecology OT. • To train the students on pre-operative procedures, anaesthesia techniques & post-operative patient management in abdominal, obs- gynecology & Urology procedures
Course Outcomes	<ul style="list-style-type: none"> • Explain surgical procedures in abdominal and obstetric surgeries. • Assist in gynecological and urology-related surgeries. • Demonstrate proficiency in instrument handling during these surgeries.

Sr. No.	Topics	No. of Hrs.
1	History taking of patients related to surgeries i.e. abdomen, obstetrics, Gynecology & Urology	30
2	Pre-Anesthetic Evaluation done for abdomen, obstetrics, Gynecology & Urology surgeries	
3	Preparation for different operative procedures i.e. laparotomy, PCNL, TURP, Hysterectomy	
4	Preparation of Anesthesia for patient posted for abdomen, obstetrics, Gynecology & Urology surgeries	
5	Identification & assessment of Post-operative Complications related to major surgeries done in general OT	
Total		30 hrs.

Name of the Program	M.Sc. Operation Theatre & Anesthesia Technology
Semester	Semester IV
Name of the Course	Procedures in Ear, Nose, Throat (ENT), Ophthalmic & Neuro OT
Course Code	MOTAT 121 T

Teaching Objective	<ul style="list-style-type: none"> • To keep pace with scientific advances in surgical procedures and anesthesia techniques in ENT, ophthalmic & pediatric OT. • To introduce different types of endotracheal instrumentation
Course Outcomes	<ul style="list-style-type: none"> • Describe procedures in ENT, ophthalmic, and neurosurgeries. • Assist in specialized surgeries in these domains. • Understand and apply patient positioning and preparation techniques.

Sr. No.	Topics	No. of Hrs.
1	ENT <ul style="list-style-type: none"> • Presentation: Cough, URTI, LRTI, hearing loss, nasal discharge, ear discharge, airway obstruction, headache, cancer & its spread • Steps in patient preparation: Optimize infections, optimize airway patency, antibiotics, bronchodilators, mucolytics • Investigations: X-Ray, CT, MRI, coagulation profile, xeroradiograms, endoscopies • Anesthesia Management: Premedicates, antisialogogues, antiemetics, Indication agents, special ETTs, throat packs, positioning, I/v fluids monitoring 	12
2	Ophthalmology <ul style="list-style-type: none"> • Pt presentation: Diminished acuity of vision, Blurred/Double vision, Discharge, pain, swelling. Ptosis, squinting • Preparation: Lowering of IOP, antibiotics, pupillary dilatation, Correction of comorbidities (IHD, DH, HT), investigation • Anesthetic Management: Mostly local analgesia, Peritubular /Tenon block Technique & precautions for general anesthesia <ul style="list-style-type: none"> -Agents causing a rise in IOP -Smooth induction -Role of monitoring -Smooth extubation 	8
3	Neuro OT <ul style="list-style-type: none"> • Patient presentation: Evidence of high ICP, Headache, vomiting, blurred vision, diplopia, seizures, bradycardia, hypertension, and neurological deficit • Patient preparation: Cerebral resuscitation, diuretics, mannitol, corticosteroids, I/V fluids, hyperventilation, anticonvulsants • Investigations: X-rays, CT, MRI, electrolytes, EKG, sugar, urea, coagulation profile, blood group, and cross-matching • Surgical procedures: Head injury, intracranial hematoma, pituitary, posterior fossa tumors, aneurysms, meningiomas. • Anesthesia management: Premedicates, induction, special endotracheal tubes, positioning, monitoring, transfusion maintaining ICP postoperative care 	10
Total		30 Hrs.

MOTAT 123 P: Procedures in Ear, Nose, Throat (ENT), Ophthalmic & Neuro OT

Teaching Objective	<ul style="list-style-type: none"> • To keep pace with scientific advances in surgical procedures and anesthesia techniques in ENT, ophthalmic & pediatric OT. • To introduce different types of endotracheal instrumentation
Course Outcomes	<ul style="list-style-type: none"> • Describe procedures in ENT, ophthalmic, and neurosurgeries. • Assist in specialized surgeries in these domains. • Understand and apply patient positioning and preparation techniques.

Sr. No.	Topics	No. of Hrs.
1	History taking of patients related to surgeries i.e. ENT, ophthalmic & Neurology	30
2	Pre-Anesthetic Evaluation done for ENT, ophthalmic & Neurology surgeries	
3	Preparation for different operative procedures done in ENT, Ophthalmology and Neuro OT	
4	Preparation of Anesthesia for patient posted for ENT, ophthalmic & Neurology surgeries	
5	Identification & assessment of Post-operative Complications related to major surgeries done in Neuro OT	
Total		30 hrs.

Course code- MOTAT 124 CP: MOTAT Directed Clinical Education – IV

Teaching Objective	<ul style="list-style-type: none">• Demonstrate the ability to manage operation theatre (OT) workflow efficiently• Apply advanced surgical assisting techniques• Evaluate clinical situations in the OT and suggest suitable interventions
Course Outcomes	<ul style="list-style-type: none">• Manage OT workflow efficiently.• Apply advanced surgical assisting techniques.• Evaluate clinical situations and suggest appropriate interventions.

Students will observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients. The student will be introduced to terminologies, equipment, and techniques used for preparation and management of the OT. (Total- 135 hrs.)

Name of the Program	M. Sc. Operation Theater & Anesthesia Technology
Semester	Semester IV
Name of the Subject	Research Project / Dissertation
Subject Code	MOTAT 116

Teaching Objectives	<ul style="list-style-type: none"> To introduce basic concepts of project and hands-on with Quality Assurance in healthcare and university and to train the students.
Course Outcome	<ul style="list-style-type: none"> Formulate a research hypothesis relevant to OT and anesthesia. Analyze clinical data and present findings. Demonstrate academic writing and presentation skills.

The Dissertation work will begin from 3rdSemester and will continue through the 4thSemester. (330 hrs.)

<ol style="list-style-type: none"> Dissertation/Project work should be carried out as an individual Dissertation and actual bench work. The students will carry independent project work under the supervision of the staff of Department on an advanced topic assigned to him/her. In house projects are encouraged. Students may be allowed to carry out the project work in other Departmental laboratories/ Research institutes / Industries as per the availability of Infrastructure. Co guides from the other institutions maybe allowed. The Dissertation/ Project work will begin from 3rd Semester, and will continue through the 4th Semester. The Dissertation/ Project report (also work book shall be presented at the time of presentation and viva voce) will be submitted at the end of the 4th Semester and evaluated. Five copies of the project report shall be submitted to the Director, SBS. For the conduct of the End Semester Examination and evaluation of Dissertation/ Project work the University will appoint External Examiners. Since the dissertation is by research, Dissertation/ Project work carries a total of 250 marks and evaluation will be carried out by both internal and external evaluators. The student has to defend his/her Dissertation/Project Work in a seminar which will be evaluated by an internal and external expert appointed by the University. The assignment of marks for Project/ Dissertation is as follows: <ol style="list-style-type: none"> Part I - Topic Selection, Review of Literature, Novelty of works-50 marks Part II <ol style="list-style-type: none"> Continuous Internal Assessment, Novelty, Overall Lab Work Culture- 100Marks Dissertation/ Project work book: 50 Marks Viva- Voce: 50 Marks
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Scheme of University Examination Theory for PG Program:

General structure / patterns for setting up question papers for Theory / Practical courses, their evaluation weightages for PG programs of MGMSBS are given in the following tables

Marks scheme for the University exam:

Final theory marks will be 100 marks (80 marks University Theory exam + 20 Marks Internal assessment).

Question		Marks distribution	Marks allotted per section	Marks
Sec: A	MCQ	10 x 1 M = 10	10	10
Sec: B	SAQ	3/4x 5 M = 15	15	35
Sec: B	LAQ	2/3 x 10 M = 10	20	
Sec: C	SAQ	3/4x 5 M = 15	15	35
Sec: C	LAQ	2/3x 10 M = 10	20	
Total				80 Marks

Practical exam pattern: Total 40 marks with following breakup:

Exercise	Description	Marks
Q No 1	Practical exercise - 1	1 x15=15 M
Q No 2	Station exercise	2x5M=10 M
Q No 3	VIVA	10 M
Q No 4	Journal	5M
Total		40 Marks

Practical to be conducted at respective departments and marks submitted jointly by the parent department to the university.

Breakup of theory IA calculation for 20 marks

Description	Marks
Internal exam (at department)	15 marks
Seminar	5 marks
Total	20 Marks

Breakup of practical IA calculation:

Description	Marks
Internal exam (at department)	10 marks
Viva	5 marks
Journal	5 marks
Total	20 Marks

Note –20 marks to be converted to 10 marks weightage for submission to the university.

Model Checklist for Evaluation of the Clinical Directed Posting (PG)

Name of the student: _____ Date: _____

Program: _____

Semester: _____ Name of the internal faculty/Observer: _____

Name of the External Faculty/Observer: _____

Core Competencies	Marks allotted	Marks obtained
	Students will begin to develop critical thinking abilities utilizing the allied health personnel roles of communicator and caregiver. Students will learn principles of professional allied health personnel practice and provide direct care to individuals within a medical surgical setting while recognizing the diverse uniqueness of individuals with health alterations.	
Clinical Teaching		
a. Demonstrate beginning competency in technical skills.	10	
Independent Work by Student guided by faculty		
a. Develop effective communication skills (verbally and through charting) with patients, team members, and family	2.5	
b. Identify intra and inter-professional team member roles and scopes of practice. Establish appropriate relationships with team members.	2.5	
Hands on practical work by students		
a. Protect confidentiality of electronic/manual health records data, information, and knowledge of technology in an ethical manner	05	
Independent work by student		
a. Demonstrate expected behaviors and complete tasks in a timely manner. Arrive to clinical experiences at assigned times. Maintain professional behavior and appearance.	05	
Log book	10	
Viva	10	
Attendance	05	
Total	50 Marks	

Sign of Internal Examiner: _____

Sign of External Examiner: _____

Evaluation for Semester III – Dissertation (PG) (Internal Assessment)

Dissertation/Project Proposal: overall performance of the student	Marks allotted	Marks Obtained
Open mindedness/ Receptivity to feedback Integrates feedback	5 Marks	
Meets deadlines / Regularity in meeting / Consistency in communication	10 Marks	
Continuous Internal evaluation (CIE)		
Interest shown in selecting topic	5 marks	
Appropriate review	10 marks	
Discussion with guide and other faculty	10 marks	
Quality of protocol	5marks	
Preparation of proforma / log book / daily reports	5marks	
TOTAL	Out of 50	

Evaluation for Semester IV - Evaluation parameter (Dissertation / Project)

Evaluation parameter (Semester IV)	Continuous Internal Evaluation (CIE)	Semester End Evaluation (SEE)	
	Guide	Internal examiner	External examiner
Thesis preparation, Novelty, Overall Lab Work Culture	25	-	-
Dissertation/Project work book	25	25	25
Evaluation of thesis including Viva Voce	-	50	50
Total	50	75	75
Overall Total = 200			



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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