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. Emergency & Trauma Care 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-3.10)], [Resolution No.3.5, (Annexure-7); Dated 29/04/2025.
2. Amended as per AC-52/2025, [Resolution No.5.1(Annexure-17J)]; [Resolution No. 5.8 (Annexure-24I)]; 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-3.10 of AC-51/2025

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.:022-2743763, 27437632, 27432890
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CHOICE BASED CREDIT SYSTEM (CBCS)

(Academic Year 2025-26)

Curriculum for

M.Sc. Allied Health Sciences

M.Sc. Emergency and Trauma Care 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 though meaningful and ethical research.

Vision

Bytheyear2022, 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. Reformations 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. Emergency & Trauma Care Technology

Duration of Study:

The duration of the study for M.Sc. Emergency & Trauma Care Technology will be of 2years.

Eligibility Criteria:

Candidate should have passed the Bachelor's Degree in Emergency Medicine, Respiratory Therapy, Physician Assistant, Anesthesiology Technology or its equivalent qualification from a recognized institution/University.

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

Course Outcome:

- The course aims to provide students with the requisite clinical assessment, decision-making skills and management for arrange of Emergency conditions and including pharmacological and non-pharmacological the rapeutic interventions.

M.Sc. EMERGENCY & TRAUMA CARE TECHNOLOGY

Program Outcomes

Program Code	M.Sc. Emergency and Trauma Care Technology
PO1	**Advanced Knowledge and Skills in Emergency and Trauma Care:** In-depth understanding of emergency and trauma management in healthcare system. Proficiency in trauma diagnostics, patient assessment, and emergency protocols.
PO2	**Clinical Competency**: Develop clinical skills for managing trauma patients, including handling life-threatening situations such as cardiac arrest, severe injuries, or other medical emergencies. They will be trained to make critical decisions in high-pressure situations.
PO3	**Technological Proficience:** Strong understanding of advance technology used in emergency and trauma care, including diagnostic tools, monitoring systems, and life-support equipment. Efficiency in application of medical devices such as ventilators, defibrillators, and other advanced technology in trauma care.
PO4	**Leadership and Management:** Learn how to manage emergency healthcare teams, especially in high-stress environments like trauma units and emergency departments. Building leadership and communication skills essential for coordinating with healthcare professionals and patients during critical situations.
PO5	**Crisis Management and Decision-Making**: Acquire strong decision-making skills in crisis situations, understanding how to prioritize patient care and manage resources effectively.
PO6	**Effective Communication** – Communicate effectively with patients, families, and healthcare teams, ensuring clarity in emergency interventions, patient education, and crisis management.
PO7	**Interdisciplinary Healthcare Collaboration:** Ability to work in multidisciplinary teams, collaborating with physicians, nurses, paramedics, and other healthcare professionals to deliver comprehensive care.
PO8	**Research and Evidence-Based Practice:** Develop the ability to critically evaluate and integrate research findings into clinical practice, ensuring that trauma care and emergency interventions are based on the best available evidence. Contribute to the advancement of knowledge and best practices in emergency and trauma care through research and innovation.

Course Outcomes

Semester I

MET 101 T & MET 103 P	Trauma and Critical Care I (T+P)	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Develop an in-depth understanding of trauma pathophysiology and the critical care needs of trauma patients.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO2	Demonstrate proficiency in trauma assessment, diagnostics, and intervention protocols in critical care settings.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO3	Analyse and apply trauma care techniques for life-threatening conditions, including respiratory failure, shock, and severe hemorrhage.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO4	Understand and manage multi-organ failure and support critical care systems in the trauma patient.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO5	Develop skills in managing trauma in the emergency department (ED) setting, including the integration of emergency medical services (EMS) and trauma teams.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill

				assessment, MCQ
MET 102 T & MET 104 P	**Trauma and Critical Care II (T+P)**	**Mapped PO**	**Teaching-Learning Methodology**	**Assessment Tools**
CO1	Demonstrate advanced clinical competencies in managing complex trauma cases, including severe head injuries, abdominal trauma, and spinal cord injuries.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO2	Apply evidence-based trauma care protocols for multi-organ failure and life-threatening conditions in the ICU.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO3	Integrate advanced monitoring techniques and critical care technologies in the management of trauma patients.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CC 001 T & CC 001 P	**Research Methodology & Biostatistics (T+ P)**	**Mapped PO**	**Teaching-Learning Methodology**	**Assessment Tools**
CO1	Student will be able to understand develop statistical models, research designs with the understating of background theory of various commonly used statistical techniques as well as analysis, interpretation & reporting of results and use of statistical software.	**PO3, PO4, PO8**	Lecture, Practical, Assignment, Seminar,	Internal assessment, University exam, Theory exam, Practical exam, Station exercise/OSCE/OSPE, Viva-voce, Assignment, MCQ
MET 105 CP	**MET Directed Clinical Education – I**	**Mapped PO**	**Teaching-Learning Methodology**	**Assessment Tools**
CO1	Build a robust theoretical	**PO1, PO2,**	Practical,	Internal assessment,

	foundation, enabling students to understand healthcare practices, disease management, and patient care, thereby empowering them to make informed decisions and adapt to evolving medical technologies.	**PO3, PO4, PO5, PO6, PO7**	Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	University exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment
CO2	Emphasize hands-on training, ensuring proficiency in clinical procedures, diagnostic techniques, and the use of advanced medical equipment. This practical exposure will bridge the gap between theory and practice, enhancing students; confidence and competence in delivering quality patient care.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment
CO3	Focus on developing professionalism, empathy, ethical conduct, teamwork, and communication skills-key traits for holistic patient care and effective collaboration in interdisciplinary healthcare teams.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8**	Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment

Semester II

MET 106 T & MET 108 P	Advance Critical Care and Management I	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Master the management of critical conditions such as respiratory failure, cardiac arrest, and septic shock in trauma patients.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO2	Utilize advanced pharmacological agents and life-support systems to stabilize trauma patients in the ICU.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO3	Develop proficiency in managing complex trauma patients with multisystem involvement, including monitoring and decision-making in the ICU.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
MET 107 T	**Advance Critical Care and Management II**	**Mapped PO**	**Teaching-Learning Methodology**	**Assessment Tools**
CO1	Apply advanced techniques in the management of post-surgical trauma patients, including pain management, nutrition, and wound care.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO2	Develop proficiency in managing trauma-induced acute kidney injury, respiratory failure, and other complications in critical care.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Lecture, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Theory exam, Practical exam, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
CO3	Analyze and integrate new research findings	**PO1, PO2, PO3,**	Lecture, Demonstrations,	Internal assessment, University exam, Theory

	into clinical practice to improve outcomes in critical trauma care.	**PO4, PO5, PO6, PO7**	Assignments, Case-study, Seminar, Workshops, Clinical simulation	exam, Practical exam, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment, MCQ
MET 109 CP	**MET Directed Clinical Education – II**	**Mapped PO**	**Teaching-Learning Methodology**	**Assessment Tools**
CO1	Build a robust theoretical foundation, enabling students to understand healthcare practices, disease management, and patient care, thereby empowering them to make informed decisions and adapt to evolving medical technologies.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment
CO2	Emphasize hands-on training, ensuring proficiency in clinical procedures, diagnostic techniques, and the use of advanced medical equipment. This practical exposure will bridge the gap between theory and practice, enhancing students; confidence and competence in delivering quality patient care.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7**	Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment
CO3	Focus on developing professionalism, empathy, ethical conduct, teamwork, and communication skills-key traits for holistic patient care and effective collaboration in interdisciplinary healthcare teams.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8**	Practical, Demonstrations, Assignments, Case-study, Seminar, Workshops, Clinical simulation	Internal assessment, University exam, Practical exam, Station Exercise/OSCE/OSPE, Viva-voce, Log book, Seminar presentation, Assignments, Case study presentation Journal club, Skill assessment
SEC 001 T	**Innovation and Entrepreneurship**	**Mapped PO**	**Teaching-Learning Methodology**	**Assessment Tools**
CO1	Understand the principles of innovation in the healthcare sector, especially in trauma and emergency care technology.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8**	Theory, E-Learning, Guest lecture, Poster and videos	Internal assessment, University exam, Theory exam, Seminar, MCQ
CO2	Develop entrepreneurial skills to create solutions	**PO1, PO2, PO3,**	Theory, E-Learning, Guest lecture, Poster	Internal assessment, University exam, Theory

	that improve the delivery of emergency and trauma care in resource-limited settings.	**PO4, PO5, PO6, PO7, PO8**	and videos	exam, Seminar, MCQ
CO3	Analyze business models and strategies to launch healthcare-related startups focused on trauma care technology.	**PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8**	Theory, E-Learning, Guest lecture, Poster and videos	Internal assessment, University exam, Theory exam, Seminar, MCQ

OUTLINE OF COURSE CURRICULUM

M.Sc. Emergemcy and Trauma Care 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														
MET 101 T	Trauma and Critical Care I	4	-	-	-	**4**	60	-	-	-	**60**	**20**	**80**	**100**
MET 102 T	Trauma and Critical Care II	3	-	-	-	**3**	45		-	-	**45**	**20**	**80**	**100**
CC 001 T	Research Methodology & Biostatics (Core Course)	3	-	-	-	**3**	45	-	-	-	**45**	-	**50**	**50**
Discipline Specific Core Practical														
MET 103 P	Trauma and Critical Care I	-	-	4	-	**2**	-	-	60	-	**60**	**10**	**40**	**50**
MET 104 P	Trauma and Critical Care II	-	-	4	-	**2**	-	-	60	-	**60**	**10**	**40**	**50**
MET 105 CP	MET Directed Clinical Education-I	-	-	-	12	**4**	-	-	-	180	**180**	-	**50**	**50**
CC 001 P	Research Methodology & Biostatics (Core Course)	-	-	4	-	**2**	-	-	60	-	**60**	-	**50**	**50**
Total		**10**	**0**	**12**	**12**	**20**	**150**	**0**	**180**	**180**	**510**	**60**	**390**	**450**

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. Emergemcy and Trauma Care 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														
MET 106 T	Advance Critical Care and Management I	4	-	-	-	**4**	60	-	-	-	**60**	**20**	**80**	**100**
MET 107 T	Advance Critical Care and Management II	4	-	-	-	**4**	60	-	-	-	**60**	**20**	**80**	**100**
Discipline Specific Core Practical														
MET 108 P	Advance Critical Care and Management I	-	-	6	-	**3**	-	-	90	-	**90**	**10**	**40**	**50**
MET 109 CP	MET 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		**11**	**0**	**6**	**18**	**20**	**165**	**0**	**90**	**270**	**525**	**50**	**350**	**400**

Common Pool of Swayam/NPTEL Coureses 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. Emergency & Trauma Care Technology

SEMESTER-I

CODE NO.	CORE SUBJECT
Discipline Specific Core Theory	
MET 101 T	Trauma and Critical Care I
MET 102 T	Trauma and Critical Care II
CC 001 T	Research Methodology & Biostatistics (Core Course)
Discipline Specific Core Practical	
MET 103 P	Trauma and Critical Care I
MET 104 P	Trauma and Critical Care II
MET 105 CP	MET Directed Clinical Education I
CC 001 P	Research Methodology & Biostatistics (Core Course)

Name of the Program	**M.Sc. Emergency & Trauma Care Technology**
Semester	**Semester I**
Name of the Subject	**Trauma and Critical Care I**
Course Code	**MET 101 T**

Teaching Outcome	• Understand the advance trauma and critical care.
Course Outcomes	• Develop an in-depth understanding of trauma pathophysiology and the critical care needs of trauma patients. • Demonstrate proficiency in trauma assessment, diagnostics, and intervention protocols in critical care settings. • Analyze and apply trauma care techniques for life-threatening conditions, including respiratory failure, shock, and severe hemorrhage. • Understand and manage multi-organ failure and support critical care systems in the trauma patient. • Develop skills in managing trauma in the emergency department (ED) setting, including the integration of emergency medical services (EMS) and trauma teams.

Sr. No.	Topics	No. of Hrs.
1	Vitals –Blood Pressure, Pulse, Respiratory Rate, Temperature,	**6**
2	Systemic Physical Examinations	**6**
3	Hemodynamic-Arterial, Central Venous, PAC	**6**
4	Arterial Blood Gas Analysis in detail	**6**
5	ECG, Cardiac Rhythm and Arrhythmias	**6**
6	Oxygen delivery devices	**6**
7	Ventilation-Invasive and Non Invasive	**6**
8	Endotracheal Intubation-Anatomical landmark, Procedure, Indications, After care	**6**
9	Percutaneous Tracheostomy Anatomical landmark ,Procedure, Indications, After care	**6**
10	Chest Tube Insertion Anatomical landmark ,Procedure, Indications, After care	**6**
Total		**60 hrs**

MET 103 P: Trauma and Critical Care I

Sr. No.	Topics	No. of Hrs.
1	ECG Interpretation	**10**
2	Instruments Handling	**10**
3	Ventilator Settings	**10**
4	Airway and breathing skills (Intubation, LMA, Bag Mask Ventilation, Oral Airway, Needle Thoracocentesis, Upper Airway Obstruction, Chocking Management)	**10**
5	Skills related circulation (Peripheral Venous Access, Central Venous Access, Intraosseous Access)	**10**
6	Arrhythmias recognition and management (Defibrillation and Cardioversion)	**10**
Total		**60 hrs**

Name of the Program	M.Sc. Emergency & Trauma Care Technology
Semester	Semester I
Name of the Course	Trauma and Critical Care II
Course Code	MET 102 T

Teaching Outcome	• To understand the advance trauma and critical care.
Learning Outcomes	• Demonstrate advanced clinical competencies in managing complex trauma cases, including severe head injuries, abdominal trauma, and spinal cord injuries. • Apply evidence-based trauma care protocols for multi-organ failure and life-threatening conditions in the ICU. • Integrate advanced monitoring techniques and critical care technologies in the management of trauma patients.

Sr. No.	Topics	No. of Hrs.
1	Paracentesis-Diagnosis and therapeutic	**4**
2	Pericardiocentesis & Pacemaker Insertion	**4**
3	Bronchoscopy, Lumbar Puncture	**5**
4	Cardioversion and Defibrillation	**4**
5	Nutrition in the ICU-aspects of total Parenteral Nutrition(TPN), Ryles Tube insertion and feeding	**5**
6	Imaging in relation to Critical Care-X-ray, Ultrasound, ECHO, CT, MRI	**5**
7	Patients Safety in the ICU, Bed Utilisation and staffing models	**5**
8	Trauma in special population	**5**
9	Mechanism of Trauma, Triage in Trauma	**4**
10	Rehabilitation and Trauma	**4**
Total		**45 hrs**

MET 104 P: Trauma and Critical Care II

Sr. No.	Topics	No. of Hrs.
1	Pre Hospital Trauma Care	**20**
2	Hands on demonstration related to trauma and critical care	**20**
3	OSCEs(objective structured clinical examination)	**20**
Total		**60 hrs**

Name of the Program	**M.Sc. Emergency And Trauma Care Technology**
Semester	**Semester I**
Name of the Course	**Research Methodology & Biostatistics (Core Course)**
Course Code	**CC 001 T**

Teaching Outcome	• 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	• Student will be able to understand develop statistical models, research designs with the understating of background theory of various commonly used statistical techniques as well as analysis, interpretation & reporting of results and use of statistical software.

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.

Course Code- MET 105 CP: MET Directed Clinical Education – I

Course Outcomes	• Build a robust theoretical foundation, enabling students to understand healthcare practices, disease management, and patient care, thereby empowering them to make informed decisions and adapt to evolving medical technologies. • Emphasize hands-on training, ensuring proficiency in clinical procedures, diagnostic techniques, and the use of advanced medical equipment. This practical exposure will bridge the gap between theory and practice, enhancing students; confidence and competence in delivering quality patient care. • Focus on developing professionalism, empathy, ethical conduct, teamwork, and communication skills-key traits for holistic patient care and effective collaboration in interdisciplinary healthcare teams.

Students will gain additional skills in interventional & advance procedure Students apply knowledge from previous clinical learning experience under the supervision of a senior technologist.
(Total- 180 hrs.)

FIRST YEAR

M. Sc. Emergency & Trauma Care Technology

SEMESTER-II

CODE NO	CORE SUBJECT
Discipline Specific Core Theory	
MET 106 T	Advance Critical Care and Management I
MET 107 T	Advance Critical Care and Management II
Discipline Specific Core Practical	
MET 108 P	Advance Critical Care and Management I
MET 109 CP	MET Directed Clinical Education-II
Skill Enhancement Course	
SEC 001 T	Innovation and Entrepreneurship
SEC 002 T	**NPTEL Swayam**

Name of the Program	**M.Sc. Emergency & Trauma Care Technology**
Semester	**Semester II**
Name of the Course	**Advance Critical Care And Management I**
Course Code	**MET 106 T**

Teaching Outcome	• To understand the advance management in emergency.
Course Outcomes	• Master the management of critical conditions such as respiratory failure, cardiac arrest, and septic shock in trauma patients. • Utilize advanced pharmacological agents and life-support systems to stabilize trauma patients in the ICU. • Develop proficiency in managing complex trauma patients with multisystem involvement, including monitoring and decision-making in the ICU.

Sr. No.	Topics	No. of Hrs.
1	Cardiac Arrest Management, Post Cardiac Arrest Care	**5**
2	Management of Respiratory Disorders, Mechanical Ventilation, Nervous and chemical control of respiration including hypoxic drive and the role of CO2	**6**
3	Mechanism of Cardiovascular system, cardiac cycle, Normal Sinus rhythm, chemical and nervous control of the cardiovascular system, shock, arrhythmias, left ventricular failure, angina	**6**
4	Shock-Types & Management	**5**
5	Venous Thromboembolism	**5**
6	Management of Electrolytes disturbances, Acid Base disorders	**5**
7	Management of Endocrine and oncological Emergencies	**6**
8	Toxicology in ICU	**5**
9	DKA, Hyperos molar coma, Hypoglycemic syndrome	**5**
10	Management of Renal Disorders, Renal Replacement Therapy	**6**
11	Gastrointestinal and hepatic disorders, Esophageal foregion bodies, Nasogastric and feeding tube placement, Decontamination of the poisoned patient	**6**
Total		**60 hrs**

MET 108 P: Advance Critical Care and Management I

Sr. No.	Topics	No. of Hrs.
1	ICU Therapy	**30**
2	Hands on demonstration related critical care	**30**
3	OSCEs (objective structured clinical examination)	**30**
Total		**90 hrs**

Name of the Program	**M.Sc. Emergency & Trauma Care Technology**
Semester	**Semester II**
Name of the Course	**Advance Critical Care And Management II**
Course Code	**MET 107 T**

Teaching Outcome	• To understand the advance management in emergency.
Course Outcomes	• Apply advanced techniques in the management of post-surgical trauma patients, including pain management, nutrition, and wound care. • Develop proficiency in managing trauma-induced acute kidney injury, respiratory failure, and other complications in critical care. • Analyze and integrate new research findings into clinical practice to improve outcomes in critical trauma care.

Sr. No.	Topics	No. of Hrs.
1	Cerebral blood flow to include the circle of willis, Transient ischemic attack, sub arachnoids hemorrhage, Meningitis, Management of neurological disorders	**10**
2	Management of Hematological Disorders	**8**
3	Transfusion practices in ICU, Management of transfusion reactions	**6**
4	Transplant patients Care in ICU	**6**
5	Anatomical and physiological changes during pregnancy, assessment and examination of pregnant woman, Normal Labor, Abnormalities in pregnancy and labor, resuscitation in pregnancy	**10**
6	Anatomical and physiological differences between adults and children, pediatrics assessment and examination and recognition of the seriously ill or deteriorating child, management of the sick child and parents, management of cardiac arrest in neonates, infants and children	**10**
7	Psychological and psychiatric aspects of emergency medical management	**10**
Total		**60 hrs**

Course Code MET 109 CP: MET Directed Clinical Education – II

Course Outcomes	• Build a robust theoretical foundation, enabling students to understand healthcare practices, disease management, and patient care, thereby empowering them to make informed decisions and adapt to evolving medical technologies. • Emphasize hands-on training, ensuring proficiency in clinical procedures, diagnostic techniques, and the use of advanced medical equipment. This practical exposure will bridge the gap between theory and practice, enhancing students; confidence and competence in delivering quality patient care. • Focus on developing professionalism, empathy, ethical conduct, teamwork, and communication skills-key traits for holistic patient care and effective collaboration in interdisciplinary healthcare teams.

Students will gain additional skills in interventional & advance procedure. Students apply knowledge from previous clinical learning experience under the supervision of a senior technologist.
(Total- 270 hrs.)

SKILL ENHANCEMENT COURSE

Name of the Program	**M.Sc. Emergency And Trauma Care Technology**
Semester	**Semester II**
Name of the Course	**Innovation and Entrepreneurship**
Course Code	**SEC 001 T**

Course Outcome	• Understand the principles of innovation in the healthcare sector, especially in trauma and emergency care technology. • Develop entrepreneurial skills to create solutions that improve the delivery of emergency and trauma care in resource-limited settings. • Analyze business models and strategies to launch healthcare-related startups focused on trauma care technology.

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 & Intellectual Property, Scaling and Growth Strategies, sustainability & Social Innovation	**15**
Total		**45 hrs**

Name of the Program	**M.Sc. Emergency and Trauma Care 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)

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.

M.Sc. Emergency & Trauma Care Technology MGM Institute of Health Sciences

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, 17 D, 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-17J 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. Emergency and Trauma Care Technology

Semester III & IV

Course Outcome
Semester III

MET 110 T	Advanced Trauma Care and Management I	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Apply advanced knowledge and clinical skills to assess, stabilize, and manage trauma patients using the ABCDE approach and evidence-based protocols from pre-hospital settings to ICU care.	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Lecture, Practical, Journal, Assignment, E-Learning and Poster / Videos	Internal Assessment and University Exam, Theory exam, MCQ, Seminar, Assignment
CO2	Demonstrate proficiency in injury-specific management including wound care, fracture stabilization, and targeted interventions for head, neck, spinal, thoracic, abdominal, pelvic, extremity, ocular, and ENT trauma.	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Lecture, Journal, Assignment, E-Learning and Poster / Videos	Internal Assessment and University Exam, Theory exam, MCQ, Seminar, Assignment
CO3	Utilize advanced diagnostic tools, monitoring systems, and life-support equipment efficiently in trauma care, ensuring timely interventions and optimal use of technology in critical situations	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Lecture, Journal, Assignment, E-Learning and Poster / Videos	Internal Assessment and University Exam, Theory exam, MCQ, Seminar, Assignment
CO4	Exhibit leadership, communication, and teamwork skills to coordinate multidisciplinary trauma teams effectively in disaster situations, mass casualty incidents, and post-trauma ICU management	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Lecture, Journal, Assignment, E-Learning and Poster / Videos	Internal Assessment and University Exam, Theory exam, MCQ, Seminar, Assignment

MET 111 T	Advanced Trauma Care and Management II	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Apply advanced knowledge and evidence-based protocols to assess and manage trauma in special populations, including pediatric, geriatric, and pregnant patients, adapting care to their unique physiological needs	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Lecture, Practical, Journal, Assignment, E-Learning and Poster / Videos	Internal Assessment and University Exam, Theory exam, MCQ, Seminar, Assignment
CO2	Demonstrate clinical competency in managing burns, crush injuries, and post-trauma surgical cases, including preoperative preparation, transfusion protocols, and prevention of complications	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Lecture, Journal, Assignment, E-Learning and Poster / Videos	Internal Assessment and University Exam, Theory exam, MCQ, Seminar, Assignment
CO3	Utilize advanced technology and equipment for diagnosis, monitoring, and life-support in military, humanitarian, and mass casualty trauma scenarios, ensuring effective crisis response	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Lecture, Journal, Assignment, E-Learning and Poster / Videos	Internal Assessment and University Exam, Theory exam, MCQ, Seminar, Assignment
CO4	Exhibit leadership, ethical practice, and communication skills in coordinating multidisciplinary trauma teams, managing medico-legal aspects, and delivering patient-centered care in high-pressure environments.	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Lecture, Journal, Assignment, E-Learning and Poster / Videos	Internal Assessment and University Exam, Theory exam, MCQ, Seminar, Assignment

MET 112	Research Project / Dissertation	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Formulate a research hypothesis relevant to Emergency & Trauma	PO1, PO2, PO4, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study
CO2	Analyze clinical data and present findings	PO4, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study
CO3	Demonstration academic writing and presentation skills	PO1, PO2, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study
CO4	Demonstrate critical thinking and problem-solving skills by defending the research findings during viva voce or presentation sessions.	PO1, PO2, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study
CO5	Contribute to the scientific community by producing research work that may lead to publication, presentation at conferences, or implementation in clinical practice.	PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study

MET 113 P	Advanced Trauma Care and Management II	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Apply advanced life support protocols including Pediatric Advanced Life Support (PALS), Advanced Trauma Life Support (ATLS), Advanced Cardiac Life Support (ACLS), and Pre-Hospital Trauma Life Support (PHTLS) to manage critically ill and injured patients across age groups	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study
CO2	Demonstrate clinical proficiency in rapid patient assessment, airway management, cardiac resuscitation, trauma stabilization, and pre-hospital interventions using evidence-based guidelines	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study
CO3	Utilize advanced medical technologies such as defibrillators, ventilators, and monitoring systems efficiently during high-pressure trauma and cardiac emergency situations	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study
CO4	Exhibit leadership, decision-making, and teamwork skills to coordinate multidisciplinary healthcare teams during pre-hospital, in-hospital, and critical care trauma scenarios	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study

MET 114 CP	MET Directed Clinical Education III	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Integrate advanced clinical knowledge and practical skills in real-world emergency and trauma care settings, demonstrating proficiency in patient assessment, diagnostics, and implementation of emergency protocols	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study

CO2	Operate and apply advanced medical technologies such as ventilators, defibrillators, and monitoring systems effectively in the management of critically ill or trauma patients	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study
CO3	Demonstrate leadership and teamwork in high-stress clinical environments by coordinating with multidisciplinary healthcare teams to deliver timely, efficient, and patient-centered care	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study
CO4	Apply evidence-based clinical decision-making during emergencies, ensuring that interventions are guided by current research, best practices, and medico-legal standards	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study

Semester IV

MET 115 T	Disaster Management and Mitigation Resources	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture	Internal Assessment, University Exam, Theory exam
CO2	Knowledge and understanding of the International Strategy for Disaster Reduction (UNISDR) and to increase skills and abilities for implementing the Disaster Risk Reduction (DRR) Strategy.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture	Internal Assessment, University Exam, Theory exam
CO3	Ensure skills and abilities to analyze potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8	Lecture	Internal Assessment, University Exam, Theory exam

MET 116 CP	MET Directed Clinical Education IV	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Integrate advanced clinical knowledge and practical skills in real-world emergency and trauma care settings, demonstrating proficiency in patient assessment, diagnostics, and implementation of emergency protocols	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study
CO2	Operate and apply advanced medical technologies such as ventilators, defibrillators, and monitoring systems effectively in the management of critically ill or trauma patients	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study
CO3	Demonstrate leadership and teamwork in high-stress clinical environments by coordinating with multidisciplinary healthcare teams to deliver timely,	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical	Practical Exam, Station Exercise, Viva-voce, Case- Study

	efficient, and patient-centered care		Simulation	
CO4	Apply evidence-based clinical decision-making during emergencies, ensuring that interventions are guided by current research, best practices, and medico-legal standards	PO1, PO2, PO3, PO4, PO5, PO6, PO7	Practical, Clinical Posting, Demonstration, Case-study, Clinical Simulation	Practical Exam, Station Exercise, Viva-voce, Case- Study

MET 112	**Research Project / Dissertation**	**Mapped PO**	**Teaching- Learning Methodology**	**Assessment Tools**
CO1	Formulate a research hypothesis relevant to Emergency & Trauma	PO1, PO2, PO4, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study
CO2	Analyze clinical data and present findings	PO4, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study
CO3	Demonstration academic writing and presentation skills	PO1, PO2, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study
CO4	Demonstrate critical thinking and problem-solving skills by defending the research findings during viva voce or presentation sessions.	PO1, PO2, PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study
CO5	Contribute to the scientific community by producing research work that may lead to publication, presentation at conferences, or implementation in clinical practice.	PO6, PO7, PO8	Demonstration, Case-study	Viva-voce, Case-Study

OUTLINE OF COURSE CURRICULUM

M.Sc. Emergemcy and Trauma Care 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														
MET 110 T	Advanced Trauma Care and Management I	4	-	-	-	**4**	60	-	-	-	**60**	**20**	**80**	**100**
MET 111 T	Advanced Trauma Care and Management II	4	-	-	-	**4**	60		-	-	**60**	**20**	**80**	**100**
MET 112	Research Project/ Dissertation		-	10	-	**5**	-	-	150	-	**150**	**50**	-	**50**
Discipline Specific Core Practical														
MET 113 P	Advanced Trauma Care and Management II	-	-	4	-	**2**	-	-	60	-	**60**	**10**	**40**	**50**
MET 114 CP	MET Directed Clinical Education III	-	-	-	15	**5**	-	-	-	225	**225**	-	**50**	**50**
Total		**8**	**0**	**14**	**15**	**20**	**120**	**0**	**210**	**225**	**555**	**100**	**250**	**350**

OUTLINE OF COURSE CURRICULUM

M.Sc. Emergemcy and Trauma Care 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
Theory (General Elective)**														
MET 115 T	Disaster Management and Mitigation Resources	4	-	-	-	**4**	60	-	-	-	**60**	**20**	**80**	**100**
Discipline Specific Core Practical														
MET 116 CP	MET Directed Clinical Education IV	-	-	-	15	**5**	-	-	-	225	**225**	-	**50**	**50**
MET 112	Research Project/ Dissertation	-	-	22	-	**11**		-	330	-	**330**	-	**200**	**200**
Total		**4**	**0**	**22**	**15**	**20**	**60**	**0**	**330**	**225**	**615**	**20**	**330**	**350**

SECOND YEAR

M.Sc. Emergency & Trauma Care Technology

SEMESTER-III

CODE NO.	CORE SUBJECT
Discipline Specific Core Theory	
MET 110 T	Advanced Trauma Care and Management I
MET 111 T	Advanced Trauma Care and Management II
MET 112	Research Project/ Dissertation
Discipline Specific Core Practical	
MET 113 P	Advanced Trauma Care and Management II
MET 114 CP	MET Directed Clinical Education III

Name of the Program	**M.Sc. Emergency & Trauma Care Technology**
Semester	**Semester III**
Name of the Subject	**Advanced Trauma Care and Management I**
Course Code	**MET 110 T**

Course Outcomes	• Apply advanced knowledge and clinical skills to assess, stabilize, and manage trauma patients using the ABCDE approach and evidence-based protocols from pre-hospital settings to ICU care • Demonstrate proficiency in injury-specific management including wound care, fracture stabilization, and targeted interventions for head, neck, spinal, thoracic, abdominal, pelvic, extremity, ocular, and ENT trauma. • Utilize advanced diagnostic tools, monitoring systems, and life-support equipment efficiently in trauma care, ensuring timely interventions and optimal use of technology in critical situations • Exhibit leadership, communication, and teamwork skills to coordinate multidisciplinary trauma teams effectively in disaster situations, mass casualty incidents, and post-trauma ICU management

Sr. No.	Topics	No. of Hrs.
1	Pre-Hospital Trauma Management, Disaster Management	4
2	ABCDE of Trauma,	4
3	Principles of Wound Management, Methods of wound closure	4
4	Head & Neck Trauma-Identify and Management	6
5	Spinal Trauma- Identify and Management	6
6	Thoracic Trauma- Identify and Management	6
7	Abdominal Trauma- Identify and Management	6
8	Pelvic Trauma- Identify and Management	6
9	Extremity Trauma- Identify and Management	6
10	Ocular Trauma & ENT Bleeds- Identify and Management	6
11	Post Trauma Care, Trauma patients in ICU	6
Total		**60 hrs.**

Name of the Program	**M.Sc. Emergency & Trauma Care Technology**
Semester	**Semester III**
Name of the Subject	**Advanced Trauma Care and Management II**
Course Code	**MET 111 T**

Course Outcomes	• Apply advanced knowledge and evidence-based protocols to assess and manage trauma in special populations, including pediatric, geriatric, and pregnant patients, adapting care to their unique physiological needs • Demonstrate clinical competency in managing burns, crush injuries, and post-trauma surgical cases, including preoperative preparation, transfusion protocols, and prevention of complications • Utilize advanced technology and equipment for diagnosis, monitoring, and life-support in military, humanitarian, and mass casualty trauma scenarios, ensuring effective crisis response • Exhibit leadership, ethical practice, and communication skills in coordinating multidisciplinary trauma teams, managing medico-legal aspects, and delivering patient-centered care in high-pressure environments

Sr. No.	Topics	No. of Hrs.
1	Pediatric Trauma-Management	7
2	Geriatrics Trauma-Management	7
3	Trauma in Pregnancy	6
4	Transfusion Protocol	6
5	Burns-Types, Percentage of burns, Burn Formula, Management	8
6	Military and Humanitarian Trauma	6
7	Crush Injury	6
8	Surgery after Trauma including preparation of the patients	8
9	Medico legal aspects of Trauma	6
Total		**60 hrs.**

Name of the Program	**M.Sc. Emergency & Trauma Care Technology**
Semester	**Semester III**
Name of the Subject	**Advanced Trauma Care and Management II**
Course Code	**MET 113 P**

Course Outcomes	• Apply advanced life support protocols including Pediatric Advanced Life Support (PALS), Advanced Trauma Life Support (ATLS), Advanced Cardiac Life Support (ACLS), and Pre-Hospital Trauma Life Support (PHTLS) to manage critically ill and injured patients across age groups • Demonstrate clinical proficiency in rapid patient assessment, airway management, cardiac resuscitation, trauma stabilization, and pre-hospital interventions using evidence-based guidelines • Utilize advanced medical technologies such as defibrillators, ventilators, and monitoring systems efficiently during high-pressure trauma and cardiac emergency situations • Exhibit leadership, decision-making, and teamwork skills to coordinate multidisciplinary healthcare teams during pre-hospital, in-hospital, and critical care trauma scenarios

Sr. No.	Topics	No. of Hrs.
1	Pediatrics Advanced Life Support	15
2	Advanced Trauma Life Support	15
3	Advanced Cardiac Life Support	15
4	Pre-Hospital Trauma Life Support	15
Total		**60 hrs.**

Name of the Program	**M. Sc. Emergency & Trauma Care Technology**
Semester	**Semester III**
Name of the Subject	**Research Project / Dissertation**
Subject Code	**MET 112**

Course Outcomes	• Formulate a research hypothesis relevant to Emergency & Trauma • Analyze clinical data and present findings • Demonstration academic writing and presentation skills • Demonstrate critical thinking and problem-solving skills by defending the research findings during viva voce or presentation sessions • Contribute to the scientific community by producing research work that may lead to publication, presentation at conferences, or implementation in clinical practice

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

Name of the Program	**M.Sc. Emergency & Trauma Care Technology**
Semester	**Semester III**
Name of the Subject	**MET Directed Clinical Education III**
Course Code	**MET 114 CP**

Course Outcomes	• **I**ntegrate advanced clinical knowledge and practical skills in real-world emergency and trauma care settings, demonstrating proficiency in patient assessment, diagnostics, and implementation of emergency protocols • Operate and apply advanced medical technologies such as ventilators, defibrillators, and monitoring systems effectively in the management of critically ill or trauma patients • Demonstrate leadership and teamwork in high-stress clinical environments by coordinating with multidisciplinary healthcare teams to deliver timely, efficient, and patient-centered care • Apply evidence-based clinical decision-making during emergencies, ensuring that interventions are guided by current research, best practices, and medico-legal standards

Students will gain additional skills in interventional & advance procedure. Students apply knowledge from previous clinical learning experience under the supervision of a senior technologist.

(Total- 225 hrs.)

SECOND YEAR

M.Sc. EMERGENCY & TRAUMA CARE TECHNOLOGY

SEMESTER- IV

Code No.	Core Subject
MET 115 T	Disaster Management and Mitigation Resources
Discipline Specific Core Practical	
MET 116 CP	MET Directed Clinical Education IV
MET 112	Research Project/ Dissertation

Name of the Program	**M. Sc. Emergency & Trauma Care Technology**
Semester	**Semester IV**
Name of the Subject	**Disaster Management and Mitigation Resources**
Subject Code	**MET 115 T**

Teaching Objectives	• To make aware the student for Disaster management and mitigation resources for betterment.
Learning Objectives	• Able to tackle the situation in difficult situations for healthcare.

Course Outcomes	At the successful completion of course, the student will gain: • Knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences. • Knowledge and understanding of the International Strategy for Disaster Reduction (UNISDR) and to increase skills and abilities for implementing the Disaster Risk Reduction (DRR) Strategy. • Ensure skills and abilities to analyze potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.

Sr. No.	Topics	No. of hrs.
1	**Introduction:** Definition of Disaster, hazard, global and Indian scenario, general perspective, importance of study in human life, Direct and indirect effects of disasters, long term effects of disasters. Introduction to global warming and climate change.	**8**
2	**Natural Disaster and Manmade disasters:** Natural Disaster: Meaning and nature of natural disaster, Flood, Flash flood, drought, cloud burst, Earthquake, Landslides, Avalanches, Volcanic eruptions, Mudflow, Cyclone, Storm, Storm Surge, climate change, global warming, sea level rise, ozone depletion Manmade Disasters: Chemical, Industrial, Nuclear and Fire Hazards. Role of growing population and subsequent industrialization, urbanization and changing life style of human beings in frequent occurrences of manmade disasters.	**15**
3	**Disaster Management, Policy and Administration:** Disaster management: meaning, concept, importance, objective of disaster management policy, disaster risks in India, Paradigm shift in disaster management. Policy and administration: Importance and principles of disaster management policies, command and co-ordination of in disaster management, rescue operations- how to start with and how to proceed in due course of time, study of flow charts howing the entire process.	**12**
4	**Financing Relief Measures:** Ways to raise finance for relief expenditure, role of government agencies and NGO's in this process, Legal aspects related to finance raising as well as overall management of disasters. Various NGO's and the works they have carried out in the past on the occurrence of various disasters, Ways to approach these teams. International relief aid agencies and their role in extreme events.	**13**

5	**Preventive and Mitigation Measures:** Pre-disaster, during disaster and post disaster measures in some events in general structural mapping: Risk mapping, assessment and analysis, sea walls and embankments, Bio shield, shelters, early warning and communication Non-Structural Mitigation: Community based disaster preparedness, risk transfer and risk financing, capacity development and training, awareness and education, contingency plans. Do's and don'ts in case of disasters and effective implementation of relief aids.	**12**
Total		**60 hrs.**

Reference Books:

1. Shailendra K. Singh: Safety & Risk Management, Mittal Publishers
2. J. H. Diwan: Safety, Security & Risk Management, APH
3. Stephen Ayers & Garmvik: Text Book of Critical Care, Holbook and Shoemaker
4. www.pdfdrive.net
5. www.khanacademy.org
6. www.acadeicearths.org
7. www.edx.org
8. www.open2study.com
9. www.academicjournals.org

Name of the Program	**M.Sc. Emergency & Trauma Care Technology**
Semester	**Semester IV**
Name of the Subject	**MET Directed Clinical Education IV**
Course Code	**MET 116 CP**

Course Outcomes	• Integrate advanced clinical knowledge and practical skills in real-world emergency and trauma care settings, demonstrating proficiency in patient assessment, diagnostics, and implementation of emergency protocols • Operate and apply advanced medical technologies such as ventilators, defibrillators, and monitoring systems effectively in the management of critically ill or trauma patients • Demonstrate leadership and teamwork in high-stress clinical environments by coordinating with multidisciplinary healthcare teams to deliver timely, efficient, and patient-centered care • Apply evidence-based clinical decision-making during emergencies, ensuring that interventions are guided by current research, best practices, and medico-legal standards

Students will gain additional skills in interventional & advance procedure. Students apply knowledge from previous clinical learning experience under the supervision of a senior technologist.
(Total- 225 hrs.)

Name of the Program	**M. Sc. Emergency & Trauma Care Technology**
Semester	**Semester IV**
Name of the Subject	**Research Project/ Dissertation**
Subject Code	**MET 112**

Teaching Objectives	• To introduce basic concepts of project and hands-on with Quality Assurance in healthcare and university and to train the students.
Learning Objectives	• Able to perform the short project with defined objectives with Quality Assurance of the RT equipment under supervision.

Course Outcomes	• Formulate a research hypothesis relevant to Emergency & Trauma • Analyze clinical data and present findings • Demonstration academic writing and presentation skills • Demonstrate critical thinking and problem-solving skills by defending the research findings during viva voce or presentation sessions • Contribute to the scientific community by producing research work that may lead to publication, presentation at conferences, or implementation in clinical practice

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

1. Dissertation/Project work should be carried out as an individual Dissertation and actual bench work.
2. 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.
3. Co guides from the other institutions may be allowed.
4. The Dissertation/Project work will begin from 3rd Semester, and will continue through the 4th Semester.
5. 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.
6. Five copies of the project report shall be submitted to the Director, SBS.
7. For the conduct of the End Semester Examination and evaluation of Dissertation/Project work the University will appoint External Examiners.
8. 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.
9. The student has to defend his/her Dissertation/Project Work in a seminar which will be evaluated by a internal and external experts appointed by the University.
10. The assignment of marks for Project/Dissertation is as follows:
    Part I-
    Topic Selection, Review of Literature, Novelty of works-50 marks
    Part-II-
    a. Continuous Internal Assessment, Novelty, Overall Lab Work Culture - 100 Marks
    b. Dissertation/Project work book: 50 Marks
    c. Viva-Voce: 50 Marks

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			

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