



# 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 2024-25 Batches)**

**Curriculum for**  
**M.Sc. Emergency &**  
**Trauma Care Technology**

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

## **Amended History**

1. Approved as per AC-49/2024 [Resolution No. 3.6], [Resolution No. 3.8], [Resolution No. 3 .10 (ii)]  
Dated 25/04/2024.
2. Approved as per AC-50/2024 [Resolution No. 3.3], Dated 27/11/2024.
3. Amended as per AC-52/2025, [Resolution No. 5.3, (Annexure-20A)]; Dated 28/11/2025.



# **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<sup>++</sup>” Accredited by NAAC

Sector 1, Kamothe Navi Mumbai-410209,

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## **CHOICE BASED CREDIT SYSTEM (CBCS)**

**(Academic Year 2024 - 25)**

**Curriculum for**

**M.Sc. Allied Health Sciences**

**M.Sc. Emergency and Trauma Care Technology**

**Semester I & II**

**DIRECTOR'S MESSAGE**

Dear Students, Greetings!!!!

I take this opportunity to welcome you on behalf of MGM family to the Masters Degree at MGM School of Biomedical Sciences.(MGMSBS)

MGM School of Biomedical Sciences (MGM SBS) established in the year 2007, the MGM School of Biomedical Sciences envisaged building a progressive learning community and is committed to pursuit of excellence in higher education, total development of personality and shaping the students into sensitive, self-reliant citizens of the country imbued with the ideals of secularism and a scientific aptitude. We set global standards to make our students scientifically as well as ethically stronger. The college adopts the national qualification frame work for the post-graduate programs which has adopted Credit Base Choice System (CBCS) so that, we construct a value based system of education that encourages critical thinking and creativity, are search platforms opposed to rote learning. The P.G(M.Sc.) courses offered are; Medical Anatomy, Medical Physiology, Medical Biochemistry, Medical Microbiology, Medical Pharmacology, Biotechnology, Genetics, Molecular Biology, Masters in Hospital administration and Biostatistics, M.Sc. Cardiac Care Technology, M.Sc. Medical Radiology and Imaging Technology, M. Optometry, M.Sc. Medical Dialysis Technology. Over time, the program has evolved, to meet the challenges of the ever changing field of biomedical education system.

With Best Wishes,

Director  
MGM School of Biomedical Sciences

## **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 a 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 providing the highest quality education in basic medical sciences by offering a dynamic study environment with well equipped labs. The school encompasses 21 courses each with its own distinct, specialized body of knowledge and skill. This includes 7 UG courses and 14 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 581 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.

**Resolution No. 3.6 of Academic Council (AC-49/2024):**

Resolved to approve the syllabus of M.Sc. Emergency and Trauma Care Technology (Semester I & II) at MGM School of Biomedical Sciences, Kamothe, Navi Mumbai from batch admitted in Academic Year 2024-25 onwards with an intake capacity of 03 students and Annual Tuition Fees of Rs. 1,05,000/-per annum [ANNEXURE-6].

**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 Bachelors 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](http://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.

**Programme Specific Outcome:**

- Student should be able to demonstrate comprehensive knowledge of managing all types of emergencies including trauma.
- Students should be able integrate knowledge with practice in handling and maintaining various equipments in ED.
- The student must well versed with infection control and Biomedical waste management.
- Student must be capable of ED management, medical record, consent and accreditation & management policies implementation.
- Students should be able to assist advanced care during Pre hospital transport and ED.
- Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patients and the clinician or other colleagues to provide the best possible management.
- Always adopt ethical principle and maintain proper etiquette in dealing with patients, relatives and other health care personnel and to respect the rights of the including the right to information ,privacy and second opinion.
- Students should have ability to work independently and take responsibility for his own work, collaborating in activities of clinical research, training ethical and evidence –based practices.

OUTLINE OF COURSE CURRICULUM														
M.Sc. Emergency 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
<b>Discipline Specific Core Theory</b>														
MET 101 L	Trauma and Critical Care I	4	-	-	-	4	60	-	-	-	60	20	80	100
MET 102 L	Trauma and Critical Care II	4	-	-	-	4	60	-	-	-	60	20	80	100
CC 001 L	Research Methodology & Biostatistics (Core Course)	3	-	-	-	3	45	-	-	-	45	20	80	100
MET 103 CP	MET Directed Clinical Education-I	-	-	-	18	6	-	-	-	270	270	-	50	50
<b>Discipline Specific Core Practical</b>														
MET 101 P	Trauma and Critical Care I	-	-	4	-	2	-	-	60	-	60	10	40	50
MET 102 P	Trauma and Critical Care II	-	-	4	-	2	-	-	60	-	60	10	40	50
CC 001 P	Research Methodology & Biostatistics (Core Course)	-	-	4	-	2	-	-	60	-	60	10	40	50
<b>Total</b>		<b>11</b>	<b>0</b>	<b>12</b>	<b>18</b>	<b>23</b>	<b>165</b>	<b>0</b>	<b>180</b>	<b>270</b>	<b>615</b>	<b>90</b>	<b>410</b>	<b>500</b>

OUTLINE OF COURSE CURRICULUM														
M.Sc. Emergency 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
<b>Discipline Specific Core Theory</b>														
MET 104 L	Advance Critical Care and Management I	3	-	-	-	3	45	-	-	-	45	20	80	100
MET 105 L	Advance Critical Care and Management II	4	-	-	-	4	60	-	-	-	60	20	80	100
MET 106 CP	MET Directed Clinical Education-II	-	-	-	27	9	-	-	-	405	405	-	50	50
<b>Discipline Specific Core Practical</b>														
MET 104 P	Advance Critical Care and Management I	-	-	4	-	2	-	-	60	-	60	10	40	50
<b>Skill Enhancement Course</b>														
SEC 001 L	Innovation and Entrepreneurship	3	-	-	-	3	45	-	-	-	45	20	80	100
SEC 002 L	One Health (NPTEL)													
<b>Total</b>		<b>10</b>	<b>0</b>	<b>4</b>	<b>27</b>	<b>21</b>	<b>150</b>	<b>0</b>	<b>60</b>	<b>405</b>	<b>615</b>	<b>70</b>	<b>330</b>	<b>400</b>

**FIRST YEAR****M.Sc. Emergency & Trauma Care Technology****SEMESTER-I**

<b>CODE NO.</b>	<b>CORE SUBJECT</b>
<b>Discipline Specific Core Theory</b>	
MET 101 L	Trauma And Critical Care I
MET 102 L	Trauma And Critical Care II
CC 001 L	Research Methodology & Biostatistics (Core Course)
MET 103 CP	MET Directed Clinical Education I
<b>Discipline Specific Core Practical</b>	
MET 101 P	Trauma And Critical Care I
MET 102 P	Trauma And Critical Care II
CC 001 P	Research Methodology & Biostatistics (Core Course)

<b>Name of the Programme</b>	<b>M.Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Subject</b>	<b>Trauma And Critical Care I</b>
<b>Course Code</b>	<b>MET 101 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>To understand the advance trauma and critical care .</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>Students should be able to do every emergency procedure and handling all instruments during emergency.</li> </ul>

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

**MET 101 P: Trauma And Critical Care I**

<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
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
<b>Total</b>		<b>60 hrs</b>

<b>Name of the Programme</b>	<b>M.Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Course</b>	<b>Trauma And Critical Care II</b>
<b>Course Code</b>	<b>MET 102 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>• To understand the advance trauma and critical care.</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>• Students should be able to do every emergency procedure and handling all instruments during emergency, and critical care management</li> </ul>

<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
1	Paracentesis-Diagnosis and therapeutic	6
2	Pericardiocentesis & Pacemaker Insertion	6
3	Bronchoscopy, Lumbar Puncture	6
4	Cardioversion and Defibrillation	6
5	Nutrition in the ICU-aspects of total Parenteral Nutrition(TPN), Ryles Tube insertion and feeding	6
6	Imaging in relation to Critical Care-X-ray, Ultrasound, ECHO, CT, MRI	6
7	Patients Safety in the ICU, Bed Utilisation and staffing models	6
8	Trauma in special population	6
9	Mechanism of Trauma, Triage in Trauma	6
10	Rehabilitation and Trauma	6
<b>Total</b>		<b>60 hrs</b>

**MET 102 P: Trauma and Critical Care II**

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

<b>Name of the Programme</b>	<b>M.Sc. Emergency And Trauma Care Technology</b>
<b>Name of the Course</b>	<b>Research Methodology &amp; Biostatistics (Core Course)</b>
<b>Course Code</b>	<b>CC 001 L</b>

<b>Teaching Objective</b>	<ul style="list-style-type: none"> <li>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, analyse the treatment of statistical inference and to focus primarily on how to specify and interpret the outcome of research.</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>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 &amp; reporting of results and use of statistical software.</li> </ul>

<b>Sr. No</b>	<b>Topic</b>	<b>No. of Hrs.</b>
<b>A</b>	<b>Research Methodology:</b>	<b>23</b>
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, Panel 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), How to Select a Random Sample?, Systematic sampling, Stratified sampling, Cluster sampling, Area sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.	5
4	Measurement in research: Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement	3
5	Methods of Data Collection: Types of data, Collection of Primary Data, Observation Method, Interview Method, Collection of Primary Data	4
6	Ethics and Ethical practice in research and plagiarism	2
<b>B</b>	<b>Biostatistics</b>	<b>22</b>
	Data Presentation: Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, Graph: Bar charts, Histogram	

7	ms, Frequency polygons, one way scatter plots, Box plots, two way 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, Measuring the Power of a Hypothesis Test, Normal distribution, Important Parametric Tests including Z-test, t-test, and ANOVA	4
10	Chi-square Test: Chi-square as a Nonparametric Test, Conditions for the Application Chi-square test, Steps Involved in Applying Chi-square Test, Alternative Formula, Yates' Correction, and Coefficient by Contingency.	2
11	Measures of Relationship: Need and meaning, Correlation and Simple Regression Analysis	3
12	Non parametric or Distribution free Tests: Important Non parametric or Distribution-free Test Sign test, Wilcoxon signed-Rank Test, Wilcoxon Rank Sum Test: Mann-Whitney U test, Kruskal Walli's test, Friedman's test, and Spearman Correlation test.	3
13	Vital Health Statistics: Measurement of Population: rate, crude rate, specific rate, Measurement of fertility: specific fertility rate, Total fertility rate, Reproduction rate, Gross Reproduction Rate, Net Reproduction Rate, Measures related to mortality: Crude Death Rate (CDR), Age-specific death Rate, Infant and child mortality rate, Measures related to morbidity.	4
<b>Total</b>		<b>45 Hrs</b>

**CC 001 P: Research Methodology & Biostatistics**

<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs</b>
<b>A</b>	<b>Research Methodology</b>	
1	Research Article Presentation (Seminar)	5
<b>B</b>	<b>Biostatistics</b>	
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
<b>Total</b>		<b>60 hrs</b>

**Course code- MET 103 CP: MET Directed Clinical Education – I**

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)**

## COMPETENCIES (Semester I)

Assessment, inform and manage the hemodynamic abnormalities of patients of emergency & Trauma in resuscitation, Intensive Care & observation ward under supervision of Emergency residential medical officer.

- Use of invasive and noninvasive technology and interventions to assess, monitor and promote physiological stability.
- To collaborate with other healthcare team members as a part of multidisciplinary approach.
- Perform the physical examination according to patients history under supervision of register medical officer.
- Perform independently Phlebotomy with Blood collection, Foleys Catheterization, Ryles tube insertion, Arterial Blood Gas.
- Perform, Analysis and inform the procedure like Arterial blood gas, Electrocardiogram, X ray etc. under supervision of Emergency residential medical officer.
- Observed, Assist & Perform advanced procedure under supervision of Emergency residential medical officer.
  - 1) Endotracheal Intubation
  - 2) Central Venous Catheterization
  - 3) Tracheostomy
  - 4) Pacemaker Insertion
  - 5) Lumbar Puncture
  - 6) Bronchoscopy
  - 7) Cardioversion & Defibrillation
  - 8) Ascitic Tapping
  - 9) Pleural Tapping
  - 10) Chest Tube Insertion
- They should able to develop interpersonal communication skills and counseling.

**FIRST YEAR****M. Sc. Emergency & Trauma Care Technology****SEMESTER-II**

<b>CODE NO</b>	<b>CORE SUBJECT</b>
<b>Discipline Specific Core Theory</b>	
MET 104 L	Advance Critical Care and Management I
MET 105 L	Advance Critical Care and Management II
MET 106 CP	MET Directed Clinical Education-II
<b>Discipline Specific Core Practical</b>	
MET 104 P	Advance critical care and management I
<b>Skill Enhancement Course</b>	
SEC 001 L	Innovation and Entrepreneurship
SEC 002 L	One Health (NPTEL)

<b>Name of the Programme</b>	<b>M.Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Course</b>	<b>Advance Critical Care And Management I</b>
<b>Course Code</b>	<b>MET 104 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>• To understand the advance management in emergency .</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>• Students should be able to do every advance emergency procedure and mange critically ill patients.</li> </ul>

<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
1	Cardiac Arrest Management, Post Cardiac Arrest Care	4
2	Management of Respiratory Disorders, Mechanical Ventilation, Nervous and chemical control of respiration including hypoxic drive and the role of CO <sub>2</sub>	4
3	Mechanism of Cardiovascular system, cardiac cycle, Normal Sinus rhythm, chemical and nervous control of the cardiovascular system, shock, arrhythmias, left ventricular failure, angina	4
4	Shock-Types & Management	5
5	Venous Thromboembolism	4
6	Management of Electrolytes disturbances, Acid Base disorders	4
7	Management of Endocrine and oncological Emergencies	4
8	Toxicology in ICU	4
9	DKA, Hyperos molar coma, Hypoglycemic syndrome	4
10	Management of Renal Disorders, Renal Replacement Therapy	4
11	Gastrointestinal and hepatic disorders, Esophageal foreigon bodies, Nasogastric and feeding tube placement, Decontamination of the poisoned patient	4
<b>Total</b>		<b>45 hrs</b>

**MET 104 P: Advance Critical Care and Management I**

<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
1	ICU Therapy	20
2	Hands on demonstration related critical care	20
3	OSCEs (objective structured clinical examination)	20
<b>Total</b>		<b>60 hrs</b>

<b>Name of the Programme</b>	<b>M.Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Course</b>	<b>Advance Critical Care And Management II</b>
<b>Course Code</b>	<b>MET 105 L</b>

<b>Teaching Objectivess</b>	<ul style="list-style-type: none"> <li>To understand the advance management in emergency.</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>Students should be able to do every advance emergency procedure and mange critically ill patients.</li> </ul>

<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
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
<b>Total</b>		<b>60 hrs</b>

**Course Code MET 106 CP: MET Directed Clinical Education – II**

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- 405 hrs)**

## SKILL ENHANCEMENT COURSE

<b>Name of the Programme</b>	<b>M.Sc. Emergency And Trauma Care Technology</b>
<b>Name of the Course</b>	<b>Innovation and Entrepreneurship</b>
<b>Course Code</b>	<b>SEC 001 L</b>

<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• Students will grasp the concepts of innovation, its ecosystem, and the role of various stakeholders such as government policies, startups, and innovation hubs.</li> <li>• Cultivating an entrepreneurial mindset and leadership qualities necessary for driving innovation and leading ventures.</li> <li>• Understanding the intersection of technology and innovation and leveraging emerging technologies for entrepreneurial ventures.</li> </ul>
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<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
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
<b>Total</b>		<b>45 hrs</b>

<b>Name of the Programme</b>	<b>M.Sc. Emergency And Trauma Care Technology</b>
<b>Name of the Course</b>	<b>One Health (NPTEL)</b>
<b>Course Code</b>	<b>SEC 002 L</b>

<b>Course Outcomes</b>	<ul style="list-style-type: none"> <li>• A comprehensive understanding of One Health's role in global health challenges, emphasizing interconnectedness among human, animal, and environmental health.</li> <li>• Topics include research ethics, disease surveillance, and successes in controlling emerging infectious diseases.</li> <li>• Students explore disease emergence, transmission, antimicrobial resistance, and food safety, gaining insights into effective public health strategies.</li> </ul>
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<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
<b>1</b>	Introduction to One Health : <ul style="list-style-type: none"> <li>• Introduction to the One Health One Medicine Concept and National &amp; International health/public health agencies</li> <li>• Global Health vs One Health</li> <li>• Basics of Research Ethics</li> <li>• Integrated human and animal disease surveillance systems</li> <li>• 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</li> </ul>	<b>5</b>
<b>2</b>	Emerging Infectious Diseases and Antimicrobial Resistance: <ul style="list-style-type: none"> <li>• Emerging infectious diseases</li> <li>• Process of disease emergence and assessment of the risk factors</li> <li>• Mechanisms of pathogen cross over across species boundaries and emerging infectious disease transmission, and its relevance in the 21st century</li> <li>• Importance of disease detection, Identification and monitoring in public health and the gaps in current health systems approaches and importance of Genome Sequencing</li> <li>• Introduction to disease vectors and basics of Medical Entomology</li> <li>• 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)</li> <li>• Antimicrobial resistance a global threat and Importance of antibiotic stewardship program</li> <li>• Introduction of Food Safety and Food Borne Diseases</li> </ul>	<b>10</b>
<b>3</b>	One Health Application in Management of Zoonotic Diseases: <ul style="list-style-type: none"> <li>• What are zoonotic diseases &amp; its role in our changing world</li> <li>• Understanding of bacterial, viral and parasitic zoonotic diseases; critical evaluation of its control measures, awareness of local, national and global factors and Influences</li> <li>• Biogeography of zoonosis</li> </ul>	<b>10</b>

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

**COMPETENCIES (Semester II)**

- Assessment, inform and manage the hemodynamic abnormalities of patients of emergency & Trauma in resuscitation, Intensive Care & observation ward under supervision of Emergency residential medical officer.
- Use of invasive and noninvasive technology and interventions to assess, monitor and promote physiological stability.
- To collaborate with other healthcare team members as a part of multidisciplinary approach.
- Perform the physical examination according to patients history under supervision of register medical officer.
- Perform independently Phlebotomy with Blood collection, Foleys Catheterization, Ryles tube insertion, Arterial Blood Gas.
- Perform, Analysis and inform the procedure like Arterial blood gas, Electrocardiogram, X ray etc. under supervision of Emergency residential medical officer.
- Observed, Assist & Perform advanced procedure under supervision of Emergency residential medical officer.
  - 1) Endotracheal Intubation
  - 2) Central Venous Catheterization
  - 3) Tracheostomy
  - 4) Pacemaker Insertion
  - 5) Lumbar Puncture
  - 6) Bronchoscopy
  - 7) Cardioversion & Defibrillation
  - 8) Ascitic Tapping
  - 9) Pleural Tapping
  - 10) Chest Tube Insertion
- They should able to develop interpersonal communication skills and counseling.
- In addition to the above competencies in first semester should have knowledge in assessment, diagnosis and management of the conditions which are included in second semester under supervision of Emergency residential medical officer.

## Scheme of University Examination Theory for PG Program

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

### 2.2 a: Marks scheme for the University exam:

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

Question	Type	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	2/3 x 10 M = 10	15	35
Sec: C	LAQ	2/3x 10 M = 10	20	
				Total = 80 M

### 2.2 b: Practical exam pattern: Total 40 marks with following breakup :

Exercise	Description	Marks
Q No 1	Practical exercise - 1	1 x20=20 M
Q No 2	Station exercise	2x5M=10 M
Q No 3	VIVA	10 M
Q No 4	Journal	NIL
		Total = 40 M

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

**2.2 d: Breakup of theory IA calculation for 20 marks**

Internal exam (at department)	15 marks
Seminar	5 marks
	Total = 20 M

**Breakup of practical IA calculation:**

Internal exam (at department)	10 marks
Viva	5 marks
Journal	5 marks
	Total = 20 M

**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.	
<b>Clinical Teaching</b>		
a. Demonstrate beginning competency in technical skills.	10	
<b>Independent Work by Student guided by faculty</b>		
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	
<b>Hands on practical work by students</b>		
a. Protect confidentiality of electronic/manual health records data, information, and knowledge of technology in an ethical manner	05	
<b>Independent work by student</b>		
a. Demonstrate expected behaviors and complete tasks in a timely manner. Arrive to clinical experiences at assigned times. Maintain professional behavior and appearance.	05	
<b>Log book</b>	10	
<b>Viva</b>	10	
<b>Attendance</b>	05	
<b>Total</b>	<b>50 Marks</b>	

Sign of Internal Examiner: \_\_\_\_\_

Sign of External Examiner: \_\_\_\_\_

**Resolution No. 3.8 of Academic Council (AC-49/2024):**

Resolved to approve the proposal to initiate MOOC programs as an elective in M.Sc. Clinical Nutrition, M.Sc. OT&AT and M.Sc. Emergency & Trauma Care as a pilot study (for including in the marksheet) from batch admitted in Academic Year 2024-25 onwards.

**Resolution No. 3.10 of Academic Council (AC-49/2024):**

(ii) Resolved and approved to collect the Dissertations/Projects 60 days before the University examination for all 2-year M.Sc. programs under MGM School of Biomedical Sciences to fulfil the credit allotted for project work, to be effective from batch 2023-24 onwards.



# **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<sup>++</sup>” Accredited by NAAC

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

Email. [sbsnm@mgmuhs.com](mailto:sbsnm@mgmuhs.com)/Website: [www.mgmsbsnm.edu.in](http://www.mgmsbsnm.edu.in)

## **CHOICE BASED CREDIT SYSTEM (CBCS)**

**(Academic Year 2024 - 25)**

**Curriculum for**

**M.Sc. Allied Health Sciences**

**M.Sc. Emergency and Trauma Care Technology**

**Second Year**

**Semester III & IV**

Resolution No. 5.3 of Academic Council (AC-52/2025):

Resolved to approve the typographical and clerical corrections in the index of the III and IV Semester syllabuses of the 'M.Sc. Emergency & Trauma Care Technology' program and the IV Semester syllabus of the 'M.Sc. Operation Theatre & Anaesthesia Technology' program, applicable for the 'Academic Year 2024-25 batch' only. These corrections do not alter the overall structure, credit distribution or learning outcomes of the respective programs [ANNEXURE-20A & 20B].

## Proposed Index M.Sc. Emergency &amp; Trauma Care Technology Semester III

**SEMESTER III – REVISED**

OUTLINE OF COURSE CURRICULUM														
M.Sc. Emergency and Trauma Care Technology														
Semester III														
Code No.	Core Course	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)/Dissertation	Clinical Posing/Rotation (CP)	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)/Dissertation	Clinical Posing/Rotation (CP)	Total (hrs.)	Internal Assement (IA)	Semester End Exam (SEE)	Total
<b>Discipline Specific Core Theory</b>														
MET 107 L	Advanced Trauma Care and Management I	4	-	-	-	4	60	-	-	-	60	20	80	100
MET 108 L	Advanced Trauma Care and Management II	4	-	-	-	4	60	-	-	-	60	20	80	100
MET 109 CP	MET Directed Clinical Education III	-	-	-	21	7	-	-	-	315	315	-	50	50
MET 110	Dissertation / Project*	-	-	10	-	5	-	-	-	-	150	50	-	50
<b>Discipline Specific Core Practical</b>														
MET 108 P	Advanced Trauma Care and Management II	-	-	2	-	1	-	-	30	-	30	10	40	50
<b>Total</b>		<b>8</b>	<b>0</b>	<b>12</b>	<b>21</b>	<b>21</b>	<b>120</b>	<b>0</b>	<b>30</b>	<b>315</b>	<b>615</b>	<b>100</b>	<b>250</b>	<b>350</b>

## Proposed Index M.Sc. Emergency &amp; Trauma Care Technology Semester IV

**SEMESTER IV – REVISED**

OUTLINE OF COURSE CURRICULUM														
M.Sc. Emergency and Trauma Care Technology														
Semester IV														
Code No.	Core Course	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)/Dissertation	Clinical Posing/Rotation (CP)	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)/Dissertation	Clinical Posing/Rotation (CP)	Total (hrs.)	Internal Assement (IA)	Semester End Exam (SEE)	Total
<b>General Elective (Any one)</b>														
GE 001 L	Pursuit of Inner Self Excellence(POISE)	4	-	-	-	4	60	-	-	-	60	20	80	100
GE 002 L	Bioethics, Biosafety, IPR and Technology Transfer													
GE 003 L	Disaster Management and Mitigation Resources													
GE 004 L	Human Rights													
MET 111 CP	MET Directed Clinical Education IV	-	-	-	15	5	-	-	-	225	225	-	50	50
<b>Discipline Specific Core Practical</b>														
MET 112	Dissertation/ Project	-	-	22	-	11	-	-	330	-	330	-	200	200
<b>Total</b>		<b>4</b>	<b>0</b>	<b>22</b>	<b>15</b>	<b>20</b>	<b>60</b>	<b>0</b>	<b>330</b>	<b>225</b>	<b>615</b>	<b>20</b>	<b>330</b>	<b>350</b>

**Learning Objective / Program Outcome:**

**At the end of completion of M.Sc. Emergency & Trauma Care Technology student shall achieve following skills**

1. Provide first aid or primary treatment in emergency and trauma cases in the hospital and in the field.
2. Assist the doctor in management of common medical & surgical emergencies. They can perform all emergency procedures (i.e. ET Intubation, Central line Insertion, needle thoracotomy, Lumbar puncture, etc.) under Supervision of. Certified Physician.
3. Explain the importance of 'Golden Hour' in trauma cases.
4. Do a primary survey of a trauma or emergency patient.
5. Perform CPR (Basic + Defibrillation) in adults as well as pediatric patients.
6. Perform maintenance and care of life saving equipment's in casualty. (Emergency department)
7. Maintain and monitor emergency drug kit.
8. Use equipment like X-ray machine, ECG machine, C-arm, Anesthesia machine, Ventilator, Infusion, Pump.
9. Transport a patient safely (intra and Inter hospital)
10. Communicate with patients, victims, patient's relatives and masses.
11. Carry out triage and assist the physician in disaster management.
12. Assist the doctor in management of critically ill patients in casualty, as well as in Intensive Care Units.
13. Describe and use emergency drugs, techniques and monitoring.
14. Describe medico- legal aspects of emergency cases.

## SECOND YEAR

### M.Sc. Emergency & Trauma Care Technology

#### SEMESTER-III

CODE NO.	CORE SUBJECT
<b>Discipline Specific Core Theory</b>	
MET 107 L	Advanced Trauma Care and Management I
MET 108 L	Advanced Trauma Care and Management II
MET 109 CP	MET Directed Clinical Education III
MET 110	Dissertation / Project*
<b>Discipline Specific Core Practical</b>	
MET 108 P	Advanced Trauma Care and Management II

<b>Name of the Programme</b>	<b>M.Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Subject</b>	<b>Advanced Trauma Care and Management I</b>
<b>Course Code</b>	<b>MET 107 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>To understand the advance trauma management.</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>Students should be able to identify and manage every trauma.</li> </ul>

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

<b>Name of the Programme</b>	<b>M.Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Subject</b>	<b>Advanced Trauma Care and Management II</b>
<b>Course Code</b>	<b>MET 108 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>To understand the advance trauma management.</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>Students should be able to identify and manage every trauma.</li> </ul>

<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
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
<b>Total</b>		<b>60 hrs.</b>

### **MET 108 P: Advanced Trauma Care and Management II**

<b>Sr. No.</b>	<b>Topics</b>	<b>No. of Hrs.</b>
1	Pediatrics Advanced Life Support	5
2	Advanced Trauma Life Support	10
3	Advanced Cardiac Life Support	5
4	Pre-Hospital Trauma Life Support	10
<b>Total</b>		<b>30 hrs.</b>

**Course Code MET 109 CP: MET Directed Clinical Education – III**

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- 450 hrs.)**

<b>Name of the Program</b>	<b>M. Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Subject</b>	<b>Dissertation / Project*</b>
<b>Subject Code</b>	<b>MET 110</b>

**\*The Dissertation work will begin from 3<sup>rd</sup> Semester, and will continue through the 4<sup>th</sup> Semester.**

## SECOND YEAR

### M.Sc. EMERGENCY & TRAUMA CARE TECHNOLOGY

#### SEMESTER- IV

Code No.	Core Subject
<b>General Elective (Any one)</b>	
GE 001 L	Pursuit of Inner Self Excellence (POISE)
GE 002 L	Bioethics, Biosafety, IPR, and Technology Transfer
GE 003 L	Disaster Management and Mitigation Resources
GE 004 L	Human Rights
MET 111 CP	MET Directed Clinical Education IV
<b>Discipline Specific Core Practical</b>	
MET 112	Dissertation / Project*

\*(a) **Dissertation / Project Course** commences in III Semester

**(Elective): Any one subject is to be chosen from the following** (Subjects offered may change from time to time depending on the availability of expertise)

\*\*Elective courses may or may not have practical and/or field work.

▲ Multidisciplinary/ Interdisciplinary

## General Elective

<b>Name of the Program</b>	<b>M. Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the subject</b>	<b>Pursuit of Inner Self Excellence (POISE)</b>
<b>Subject Code</b>	<b>GE 001 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>To identify the self-excellence from the student and encourage him/her for betterment.</li> </ul>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>Able to perform in a better way in the society</li> </ul>

<b>Course outcomes</b>	<ul style="list-style-type: none"> <li>Students will become self-dependent, more decisive and develop intuitive ability for their study and career related matter.</li> <li>Student's ability to present their ideas will be developed.</li> <li>Enhanced communication skills, public speaking &amp; improved Presentation ability.</li> <li>Students will be able to explore their inner potential and inner ability to become a successful researcher or technician &amp; hence become more focused.</li> <li>Students will observe significant reduction in stress level.</li> <li>With the development of personal attributes like Empathy, Compassion, Service, Love &amp; brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.</li> </ul>
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Sr. No.	Topics	No. of hrs.
1	<b>Spiritual Values for human excellence</b> :The value of human integration; Compassion, universal love and brotherhood (Universal Prayer) ;Heart based living ; Silence and its values, Peace and non-violence in thought, word and deed ; Ancient treasure of values -Shatsampatti, Patanjali's Ashtanga Yoga, Vedic education-The role of the Acharya, values drawn from various cultures and religious practices-Ubuntu, Buddhism, etc.: Why spirituality? Concept–significance: Thought culture	15
2	<b>Ways and Means</b> :Correlation between the values and the subjects ;Different teaching techniques to impart value education; Introduction to Brighter Minds initiative; Principles of Communication; Inspiration from the lives of Masters for spiritual values- Role of the living Master	15
3	<b>Integrating spiritual values and life:</b> Relevance of VBSE (Value Based Spiritual Education) in contemporary life; Significant spiritual values; Spiritual destiny; Principles of Self-management; Designing destiny	15
4	<b>Experiencing through the heart for self-transformation (Heartfulness Meditation):</b> Whoam I? ; Introduction to Relaxation; Why, what and how HFN Meditation?; Journal writingfor Self-Observation; Why, what and how HFN Rejuvenation(Cleaning)?; Why, what andhow HFN connect to Self (Prayer)?; Pursuit of inner self excellence; Collective Consciousness – concept of <i>egregore effect</i> ;	15
<b>Total</b>		<b>60 hrs.</b>

**Reference Books:**

1. [www.pdfdrive.net](http://www.pdfdrive.net)
2. [www.khanacademy.org](http://www.khanacademy.org)
3. [www.acadeicearths.org](http://www.acadeicearths.org)
4. [www.edx.org](http://www.edx.org)
5. [www.open2study.com](http://www.open2study.com)
6. [www.academicjournals.org](http://www.academicjournals.org)

<b>Name of the Program</b>	<b>M. Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the subject</b>	<b>Bioethics, Biosafety, IPR, and Technology Transfer</b>
<b>Subject Code</b>	<b>GE 002 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>To make aware the student about bioethics, biosafety and other aspects related to technology transfer and encourage him/her for betterment..</li> </ul>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>Able to understand the ethics for healthcare</li> </ul>

<b>Course Outcomes</b>	<p><b>Students will learn to:</b></p> <ul style="list-style-type: none"> <li>Effectively manage the health and safety aspects of a biological laboratory.</li> <li>Give reliable, professional and informed advice and information to colleagues and managers.</li> <li>Help to ensure that their institution complies with relevant legislation, liaise effectively with enforcing authorities and beware of the penalties for failing to comply.</li> <li>Build a context of understanding through communication.</li> <li>Mediate between other conflicting parties.</li> <li>Exhibit de – escalatory behaviours in situations of conflict.</li> <li>Demonstrate acknowledgment and validation of the feelings, opinions, and contributions of others.</li> </ul>
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<b>Sr. No.</b>	<b>Topics</b>	<b>No. of hrs.</b>
1	<b>Ethics:</b> Benefits of Allied Health Sciences, ELSI of Bioscience, recombinant the rapeutic products for human healthcare, genetic modifications and food consumption, release of genetically engineered organisms, applications of human genetic r DNA research, human embryonic stem cell research.	15
2	<b>Patenting:</b> Patent and Trademark, Bio science products and processes, Intellectual property rights, Plant breeders rights, trade marks, industrial designs, copyright biotechnology in developing countries. Biosafety and its implementation, Quality control in Biotechnology.	15
3	<b>Introduction to quality assurance, accreditation &amp; SOP writing :</b> Concept of ISO standards and certification, National regulatory body for accreditation, Quality parameters, GMP& GLP, Standard operating procedures, Application of QA in field of genetics, Data management of clonical and testing laboratory.	15
4	<b>Funding Agencies</b> (Financing alternatives, VC funding, funding for Bioscience in India, Exit strategy, licensing strategies, valuation), support mechanisms for entrepreneurship (Bioentrepreneurship efforts in India, difficulties in India experienced, organizations supporting gro with, areas of scope, funding agencies in India, policy initiatives), Role of knowledge centers and R&D (knowledge centers like universities and research institutions, role of technology and up gradation)	15
<b>Total</b>		<b>60 hrs.</b>

**Reference Books:**

1. [www.pdfdrive.net](http://www.pdfdrive.net)
2. [www.khanacademy.org](http://www.khanacademy.org)
3. [www.acadeicearths.org](http://www.acadeicearths.org)
4. [www.edx.org](http://www.edx.org)
5. [www.open2study.com](http://www.open2study.com)
6. [www.academicjournals.org](http://www.academicjournals.org)

<b>Name of the Program</b>	<b>M. Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Subject</b>	<b>Disaster management and mitigation resources</b>
<b>Subject Code</b>	<b>GE 003 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>To make aware the student for Disaster management and mitigation resources for betterment.</li> </ul>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>Able to tackle the situation in difficult situations for healthcare.</li> </ul>

<b>Course Outcomes</b>	<p>At the successful completion of course the student will gain:</p> <ul style="list-style-type: none"> <li>Knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences.</li> <li>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.</li> <li>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.</li> </ul>
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<b>Sr. No.</b>	<b>Topics</b>	<b>No. of hrs.</b>
1	<b>Introduction:</b> 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	<b>Natural Disaster and Manmade disasters:</b> 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	<b>Disaster Management, Policy and Administration:</b> 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	<b>Financing Relief Measures:</b> 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	<p><b>Preventive and Mitigation Measures:</b> 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.</p>	12
<b>Total</b>		<b>60 hrs.</b>

**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](http://www.pdfdrive.net)
5. [www.khanacademy.org](http://www.khanacademy.org)
6. [www.acadeicearths.org](http://www.acadeicearths.org)
7. [www.edx.org](http://www.edx.org)
8. [www.open2study.com](http://www.open2study.com)
9. [www.academicjournals.org](http://www.academicjournals.org)

<b>Name of the Program</b>	<b>M. Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Subject</b>	<b>Human Rights</b>
<b>Subject Code</b>	<b>GE 004 L</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>To make aware the student about Human Rights for betterment.</li> </ul>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>Able to understand the Human Rights and tackle the situation in the healthcare.</li> </ul>

<b>Course Outcomes</b>	<p>Student will be able to virtue:</p> <ul style="list-style-type: none"> <li>Identify, contextualize and use information about the human rights situation in a given country</li> <li>Critically appraise source material, including cases from human rights committees and tribunals and reports and summary records from treaty bodies</li> <li>Analyze a country's situation or an international situation in terms of human rights and formulate human rights-based initiatives and policies</li> <li>Promote human rights through legal as well as non-legal means.</li> <li>Participate in legal, political and other debates involving human rights in acknowledge able and constructive way</li> </ul>
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<b>Sr. No.</b>	<b>Topics</b>	<b>No. of hrs.</b>
1	<b>Background:</b> Introduction, Meaning, Nature and Scope, Development of Human Rights, Theories of Rights, Types of Rights	8
2	<b>Human rights at various level:</b> Human Rights at Global Level UNO, Human Rights – UDHR 1948– UN Conventions on Human Rights: International Covenant on civil and Political Rights 1966, International Convent on Economic, Social and Cultural Right, Racial Discrimination -1966 International, Instruments: U.N. Commission for Human Rights, European Convention on Human Rights.	15
3	<b>Human rights in India:</b> Development of Human Rights in India, Human Rights and the Constitution of India, Protection of Human Rights Act 1993- National Human Rights Commission, State Human Rights Commission, Composition Powers and Functions, National Commission for Minorities, SC/ST and Woman	12
4	<b>Human Rights Violations:</b> Human Rights Violations against Women, Human Rights Violations against Children, 35 Human Rights Violations against Minorities SC/ST and Trans-genders, Preventive Measures	13
5	<b>Political issues:</b> Political Economic and Health Issues, Poverty, Unemployment, Corruption and Human Rights, Terrorism and Human Rights, Environment and Human Rights, Health and Human Rights	12
<b>Total</b>		<b>60 hrs.</b>

**Reference Books:**

1. Jagannath Mohanty Teaching of Human Rights New Trends and Innovations Deep & Deep Publications Pvt. Ltd. New Delhi 2009
2. Ram Ahuja: Violence Against Women Rawat Publications Jewahar Nager Jaipur. 1998.
3. Sivagami Parmasivam Human Rights Salem 2008
4. Hingorani R. C. : Human Rights in India: Oxford and IBA New Delhi.

**Course Code MET 111 CP: MET Directed Clinical Education – IV**

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.)**

<b>Name of the Program</b>	<b>M. Sc. Emergency &amp; Trauma Care Technology</b>
<b>Name of the Subject</b>	<b>Dissertation / Project Work</b>
<b>Subject Code</b>	<b>MET 112</b>

<b>Teaching Objectives</b>	<ul style="list-style-type: none"> <li>To introduce basic concepts of project and hands-on with Quality Assurance in healthcare and university and to train the students.</li> </ul>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>Able to perform the short project with defined objectives with Quality Assurance of the RT equipment under supervision.</li> </ul>

**The Dissertation work will begin from 3<sup>rd</sup>Semester and will continue through the 4<sup>th</sup>Semester.**

**(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 maybe 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 an 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- 100Marks
    - b. Dissertation/ Project work book: 50 Marks
    - c. Viva- Voce: 50 Marks
    - d. However, a student in 4th semester will have to opt for general elective course from other related disciplines in addition to his Dissertation/ Project work in the parent department.

### **Scheme of University Examination Theory for PG Program:**

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

#### **2.2 a: Marks scheme for the University exam:**

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

<b>Question</b>	<b>Type</b>	<b>Marks distribution</b>	<b>Marks allotted per section</b>	<b>Marks</b>
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	2/3 x 10 M = 10	15	35
Sec: C	LAQ	2/3x 10 M = 10	20	
				Total = 80 M

#### **2.2 b: Practical exam pattern: Total 40 marks with following breakup :**

<b>Exercise</b>	<b>Description</b>	<b>Marks</b>
Q No 1	Practical exercise - 1	1 x20=20 M
Q No 2	Station exercise	2x5M=10 M
Q No 3	VIVA	10 M
Q No 4	Journal	NIL
		Total = 40 M

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

**2.2 d: Breakup of theory IA calculation for 20 marks**

Internal exam (at department)	15 marks
Seminar	5 marks
	Total = 20 M

**Breakup of practical IA calculation:**

Internal exam (at department)	10 marks
Viva	5 marks
Journal	5 marks
	Total = 20 M

**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.	
<b>Clinical Teaching</b>		
a. Demonstrate beginning competency in technical skills.	10	
<b>Independent Work by Student guided by faculty</b>		
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	
<b>Hands on practical work by students</b>		
a. Protect confidentiality of electronic/manual health records data, information, and knowledge of technology in an ethical manner	05	
<b>Independent work by student</b>		
a. Demonstrate expected behaviors and complete tasks in a timely manner. Arrive to clinical experiences at assigned times. Maintain professional behavior and appearance.	05	
<b>Log book</b>	10	
<b>Viva</b>	10	
<b>Attendance</b>	05	
<b>Total</b>	<b>50 Marks</b>	

Sign of Internal Examiner: \_\_\_\_\_

Sign of External Examiner: \_\_\_\_\_

<b>Dissertation/Project Proposal : overall performance of the student</b>	<b>Marks allotted</b>	<b>Marks Obtained</b>
Open mindedness/ Receptivity to feedback Integrates feedback	5 Marks	
Meets deadlines / Regularity in meeting / Consistency in communication	10 Marks	
<b>Continuous Internal evaluation (CIE)</b>		
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	
<b>TOTAL</b>	<b>Out of 50</b>	

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
<b>Overall Total = 200</b>			



## 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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