



**MGM SCHOOL OF BIOMEDICAL SCIENCES**  
**(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)**

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

Grade “A<sup>++</sup>” Accredited by NAAC

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**CHOICE BASED CREDIT SYSTEM (CBCS)**

**(Academic Year 2023 - 24)**

**Curriculum for**

**B.Sc. Allied Health Sciences**

**B.Sc. Medical Radiology and Imaging Technology**

**Semester I to VIII**

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OUTLINE OF COURSE CURRICULUM														
B.Sc. Medical Radiology & Imaging 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>Theory</b>														
BMRIT 101 L	Human Anatomy Part I	2	-	-	-	2	30	-	-	-	30	10	40	50
BMRIT 102 L	Human Physiology Part I	2	-	-	-	2	30	-	-	-	30	10	40	50
BMRIT 103 L	General Biochemistry & Nutrition	3	-	-	-	3	45	-	-	-	45	10	40	50
BMRIT 104 L	Introduction to National Health Care System	2	-	-	-	2	30	-	-	-	30	10	40	50
BMRIT 101 P	Human Anatomy Part I	-	-	1	-	-	-	-	15	-	15	-	-	-
BMRIT 102 P	Human Physiology Part I	-	-	1	-	-	-	-	15	-	15	-	-	-
BMRIT 103 P	General Biochemistry Nutrition	-	-	1	-	-	-	-	15	-	15	-	-	-
BMRIT 105 P	Community Engagement & Clinical Visit (Including related practicals to the Parent course)	-	-	-	24	8	-	-	-	360	360	-	50	50
<b>Ability Enhancement Course</b>														
AEC 001 L	English & Communication skills	4	-	-	-	4	60	-	-	-	60	10	40	50
<b>Multidisciplinary Course</b>														
MD 001 L	Enviornmental Sciences	4	-	-	-	4	60	-	-	-	60	10	40	50
<b>Total</b>		<b>17</b>	<b>0</b>	<b>3</b>	<b>24</b>	<b>25</b>	<b>255</b>	<b>0</b>	<b>45</b>	<b>360</b>	<b>660</b>	<b>60</b>	<b>290</b>	<b>350</b>

OUTLINE OF COURSE CURRICULUM														
B.Sc. Medical Radiology & Imaging 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>Theory</b>														
BMRIT 106 L	Human Anatomy Part II	2	-	-	-	2	30	-	-	-	30	10	40	50
BMRIT 107 L	Human Physiology Part II	2	-	-	-	2	30	-	-	-	30	10	40	50
BMRIT 108 L	General Microbiology	3	-	-	-	3	45	-	-	-	45	10	40	50
BMRIT 109 L	Basic Pathology & Hematology	4	-	-	-	4	60	-	-	-	60	10	40	50
BMRIT 110 L	Introduction to Quality and Patient safety (Multidisciplinary/Interdisciplinary)	3	-	-	-	3	45	-	-	-	45	10	40	50
<b>Practical</b>														
BMRIT 106 P	Human Anatomy Part II	-	-	1	-	-	-	-	15	-	15	-	-	-
BMRIT 107 P	Human Physiology Part II	-	-	1	-	-	-	-	15	-	15	-	-	-
BMRIT 108 P	General Microbiology	-	-	1	-	-	-	-	15	-	15	-	-	-
BMRIT 109 P	Basic Pathology & Hematology	-	-	1	-	-	-	-	15	-	15	-	-	-
BMRIT 111 P	Community Engagement & Clinical Visit (Including related practicals to the Parent course)	-	-	-	24	8	-	-	-	360	360	-	50	50
<b>Skill Enhancement Elective Course</b>														
SEC 001 L	Medical Bioethics & IPR	3	-	-	-	3	45	-	-	-	45	10	40	50
SEC 002 L	Human Rights & Professional Values													
<b>Total</b>		<b>17</b>	<b>0</b>	<b>4</b>	<b>24</b>	<b>25</b>	<b>255</b>	<b>0</b>	<b>60</b>	<b>360</b>	<b>675</b>	<b>60</b>	<b>290</b>	<b>350</b>

OUTLINE OF COURSE CURRICULUM														
B.Sc. Medical Radiology and Imaging 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
<b>Theory</b>														
BMRIT 112 L	Physics for Medical Imaging - 1	3	1	-	-	4	45	15	-	-	60	20	80	100
BMRIT 113 L	Radiographic Techniques - 1	3	-	-	-	3	45	-	-	45	20	80	100	
BMRIT 114 L	Dark Room Techniques	3	-	-	-	3	45	-	-	45	20	80	100	
BMRIT 115 CP	MRIT Directed Clinical Education - 1	-	-	-	21	7	-	-	-	315	315	-	50	50
<b>Practical</b>														
BMRIT 112 P	Physics for Medical Imaging - 1	-	-	4	-	2	-	-	60	-	60	10	40	50
BMRIT 113 P	Radiographic Techniques - 1	-	-	4	-	2	-	-	60	-	60	10	40	50
<b>Generic Elective Course</b>														
GEC 001 L	Pursuit of Inner Self Excellence (POIS)	3	-	-	-	3	45	-	-	45	10	40	50	
GEC 002 L	Organisational Behaviour													
<b>Total</b>		<b>12</b>	<b>1</b>	<b>8</b>	<b>21</b>	<b>24</b>	<b>180</b>	<b>15</b>	<b>120</b>	<b>315</b>	<b>630</b>	<b>90</b>	<b>410</b>	<b>500</b>

OUTLINE OF COURSE CURRICULUM														
B.Sc. Medical Radiology and Imaging 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
<b>Theory</b>														
BMRIT 116 L	Physics for Medical Imaging - 2	3	1	-	-	4	45	15	-	-	60	20	80	100
BMRIT 117 L	Radiographic Techniques - 2	3	-	-	-	3	45	-	-	45	20	80	100	
BMRIT 118 L	Digital Imaging	3	-	-	-	3	45	-	-	45	20	80	100	
BMRIT 119 CP	MRIT Directed Clinical Education - 2	-	-	-	21	7	-	-	-	315	315	-	50	50
<b>Practical</b>														
BMRIT 116 P	Physics for Medical Imaging - 2	-	-	4	-	2	-	-	60	-	60	10	40	50
BMRIT 117 P	Radiographic Techniques - 2	-	-	4	-	2	-	-	60	-	60	10	40	50
<b>Ability Enhancement Elective Course</b>														
AEC 003 L	Computer and Applications	3	-	-	-	3	45	-	-	-	45	10	40	50
AEC 004 L	Biostatistics and Research Methodology													
<b>Total</b>		<b>12</b>	<b>1</b>	<b>8</b>	<b>21</b>	<b>24</b>	<b>180</b>	<b>15</b>	<b>120</b>	<b>315</b>	<b>630</b>	<b>90</b>	<b>410</b>	<b>500</b>

OUTLINE OF COURSE CURRICULUM														
B.Sc. Medical Radiology and Imaging Technology														
Semester V														
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>Theory</b>														
BMRIT 120 L	Advanced Radiographic Techniques	3	1	-	-	4	45	15	-	-	60	20	80	100
BMRIT 121 L	Equipment for Medical Imaging	4	-	-	-	4	60	-	-	-	60	20	80	100
BMRIT 122 L	Special Procedures in Medical Imaging	3	-	-	-	3	45	-	-	-	45	20	80	100
BMRIT 123 CP	MRIT Directed Clinical Education - 3	-	-	-	30	10	-	-	-	450	450	-	50	50
<b>Practical</b>														
BMRIT 120 P	Advanced Radiographic Techniques	-	-	4	-	2	-	-	60	-	60	10	40	50
BMRIT 121 P	Equipment for Medical Imaging	-	-	4	-	2	-	-	60	-	60	10	40	50
<b>Core Elective Course</b>														
CEC 005 L	Basics of Clinical Skill Learning	3	-	-	-	3	45	-	-	-	45	10	40	50
CEC 006 L	Hospital Operation Management													
<b>Total</b>		<b>13</b>	<b>1</b>	<b>8</b>	<b>30</b>	<b>28</b>	<b>195</b>	<b>15</b>	<b>120</b>	<b>450</b>	<b>780</b>	<b>90</b>	<b>410</b>	<b>500</b>

OUTLINE OF COURSE CURRICULUM														
B.Sc. Medical Radiology and Imaging Technology														
Semester VI														
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>Theory</b>														
BMRIT 124 L	Quality Assurance in Medical Imaging	3	1	-	-	4	45	15	-	-	60	20	80	100
BMRIT 125 L	Modern Technologies in Imaging	4	-	-	-	4	60	-	-	-	60	20	80	100
BMRIT 126 L	Radiation Physics and Radiation Protection	3	-	-	-	3	45	-	-	-	45	20	80	100
BMRIT 127 CP	MRIT Directed Clinical Education - 4	-	-	-	30	10	-	-	-	450	450	-	50	50
<b>Practical</b>														
BMRIT 124 P	Quality Assurance in Medical Imaging	-	-	4	-	2	-	-	60	-	60	10	40	50
BMRIT 125 P	Modern Technologies in Imaging	-	-	4	-	2	-	-	60	-	60	10	40	50
<b>Total</b>		<b>10</b>	<b>1</b>	<b>8</b>	<b>30</b>	<b>25</b>	<b>150</b>	<b>15</b>	<b>120</b>	<b>450</b>	<b>735</b>	<b>80</b>	<b>370</b>	<b>450</b>

OUTLINE OF COURSE CURRICULUM														
B.Sc. Medical Radiology and Imaging Technology														
Semester VII & VIII														
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
BMRIT 128	B.Sc. MRIT Internship (Semester VII)	-	-	1	16	17	-	-	42	1008	1050	20	80	100
BMRIT 129	B.Sc. MRIT Internship (Semester VIII)	-	-	1	16	17	-	-	42	1008	1050	20	80	100

Internship is for 12 months (July-December; January-June) after deducting for national holidays/Sick Holidays/ sundays + Examination), (6 days/week;8 Hours/day). Minimum of 21 weeks/semester. Students are encouraged to involve in community outreach activities as part of their clinical postings without absenting himself/herself for the other regular classes.

Internal Assessment Exam Pattern (IA) for Semester VII & VIII (Internship Program)		Scheme of University Semester End Examination (SEE) for Semester VII & VIII (Internship Program)			Attendance (10 marks ) of the student. It was decided that weightage be given to attendance as per following scheme	
Internal exam pattern: Total 20 marks with following breakup		Practical exam pattern: Total 80 marks with following breakup			Attendance Percentage	Marks
Description	Marks	Exercise	Description	Marks	< 75	Zero
Internal exam (at department)	10 marks	Q No 1	Case Study	2 x15=30 M	75	5
Viva	5 marks	Q No 2	Station exercise	3 x 5=15	76-80	6
Log Book	5 marks	Q No 3	VIVA	15 M	81-85	7
<b>Total = 20 Marks</b>		QNo 4	Log Book	10 M	86-90	8
		QNo 5	Attendance	10 M	91-95	9
		<b>Total = 80 Marks</b>			96-100	10

## B.Sc. Allied Courses Scheme of Examination Pattern

**B.Sc. First Year (Semester I & II) w.e.f. (Academic Year 2023-24 onwards)**

### Internal Examination Pattern (Theory)

Question type	No. of questions	Questions to be answered	Question X marks	Total marks
Short answers	5	4	4 x 3 marks each	12 marks
CIA	1. Seminar / poster (4 marks) 2. Assignments/open book test (4 marks)			8 marks
<b>Total</b>				<b>20 marks</b>

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

### University Examination Pattern (Theory)

Question Type	No. of Questions	Questions to be Answered	Question X marks	Total marks
<b>Section A</b>				
Structured LAQ	3	2	2X8	16 Marks
Short notes	8	6	6X4	24Marks
<b>Total</b>				<b>40 Marks</b>

**Note: The exam pattern for Course “Community Engagement & Clinical Visit (Including Related Practicals To The Parent Course)” is as per Annexure No-1.**

**Annexure No-1**

**EVALUATION FORM FOR**  
**COMMUNITY ENGAGEMENT & CLINICAL VISIT**  
**(INCLUDING RELATED PRACTICALS TO THE PARENT COURSE)**

**Name of the Student:****Program/Course:****Semester:****Name of the Internal Faculty/Observer:****Name of the External Faculty/Observer:**

<b>Sr. No.</b>	<b>Core Competencies</b>	<b>Marks Allotted</b>	<b>Marks Obtained</b>
1.	Community Engagement/Educational Tour/Field work/Hospital visits/NSS (Report)	15	
2.	Demonstrated understanding of responsibilities	10	
3.	Managed time effectively to meet deadlines		
4.	Communicated well with others (Staff members, Teacher, Patients, Community Members, etc)		
5.	Demonstrated knowledge required to meet objectives		
6.	Completed required tasks as assigned by Teacher/Co-ordinator		
7.	Model making / Quiz/ Poster/Conference/ Seminar/ Presentation/Innovative Ideas Competition	15	
8.	Attendance	10	
<b>Total Marks</b>		<b>50</b>	

**Internal Faculty/Observer Signature:****Date:****External Faculty/Observer Signature:**

**Internal Examination Pattern UG Second & Third Year (Semester III to VI)  
(Approved in BOM 55/2018 dated, 27/11/2018)**

**Internal examination pattern UG (Second & Third Year) (Theory) : 20marks**

<b>Question type</b>	<b>No. of questions</b>	<b>Questions to be answered</b>	<b>Question X marks</b>	<b>Total marks</b>
Long essays	2	1	1x10	10 marks
Short answers	3	2	2x5	10 marks
<b>Total</b>				<b>Total= 20 marks</b>

Marks should be submitted by respective departments at least 15 days prior to onset of university examination to the university.

**Internal examination pattern UG (Second & Third Year) (Practical) : 10marks**

Internal exam (At department level)	10 marks
Viva	5 marks
Log book	5 marks
Theory and practical	Total = 20 M

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



## University Examination Pattern UG Second & Third Year (Semester III to VI)

(Approved in BOM 55/2018 dated, 27/11/2018)

### Theory Question Paper Pattern For Core Subjects in University Examinations (Second & Third year) Under CBCS - 80 Marks

Question type	No. of questions	Questions to be answered	Question X marks	Total marks
<b>Section 1</b>				
MCQ	10	10	10x1	10 marks
<b>Section 2</b>				
Structured LAQ	3	2	2x15	30 marks
Short notes	6	5	5 x 8	40 marks
				<b>Total= 80 Marks</b>

#### General Instructions (Theory):

- Time duration of each Theory Paper will be of Three (3) Hrs or 1 1/2 hrs as the case may be.
- Total Marks of each Theory Paper will be 80 Marks / 40 Marks.
- There will be TWO Sections in Question Paper. Section ONE will be MCQ while Section TWO will be long & short essay questions. There will be internal option.
- Both the Sections are compulsory.
- Both the sections are to be written in the separate answer sheet

**Practical Question Paper Pattern For University Examinations  
Under CBCS - 40 Marks**

<b>Exercise</b>	<b>Description</b>	<b>Marks</b>
Q No 1	Practical exercise - 1	1 x10=10 M
Q No 2	Station exercise	3x5M=15 M
Q No 3	VIVA	10 M
QNo 4	Journal	5 M
		<b>Total = 40 M</b>

**General Instructions (Practical):**

- A. All the students have to remain present at the examination centre 15 minutes before the scheduled time for examination.
  - B. Students have to carry with them certified journal, I-card or examination receipt, and other necessary requirements for examination.
  - C. Candidate should not leave the practical hall without the permission of examiner.
  - D. Use of calculator is allowed but the use of mobile phones is strictly prohibited.
  - E. The candidate has to leave the laboratory only after the submission of all the answer sheets of the exercises performed.
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**Internal Examination Pattern (Elective Subject)  
UG (Second & Third Year) (Theory) : 20 marks**

<b>Question type</b>	<b>No. of questions</b>	<b>Questions to be answered</b>	<b>Question X marks</b>	<b>Total marks</b>
Long essays	2	1	1x10	10 marks
Short answers	3	2	2x5	10 marks
<b>Total</b>				<b>Total= 20 marks</b>

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

**Theory Question Paper Pattern For Elective courses under University exam for  
B.Sc. Second and Third year (semester III to V) (AY 2020-21 onwards)  
(Resolution No. 4.7 of Academic Council (AC-40/2021- Point no ii)**

<b>Question type</b>	<b>No. of questions</b>	<b>Questions to be answered</b>	<b>Question X marks</b>	<b>Total marks</b>
Structured LAQ	3	2	2x10	20 marks
Short notes	5	4	4 x5	20 marks
<b>Total</b>				<b>40 Marks</b>

## Annexure 1.5- Model Checklist for Evaluation of the Clinical Directed Posting (UG)

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: \_\_\_\_\_