



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⁺⁺”s 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. Cardiac Care Technology

Semester I to VIII

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

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

OUTLINE OF COURSE CURRICULUM														
B.Sc. Cardiac 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
Theory														
BCCT 112 L	Applied Anatomy, Physiology, Pharmacology in Cardiac care	3	1	-	-	4	60	-	-	-	60	20	80	100
BCCT 113 L	Basic Electrocardiography	3	-	-	-	3	45	-	-	-	45	20	80	100
BCCT 114 L	Basic Echocardiography	2	-	-	-	2	30	-	-	-	30	20	80	100
BCCT 115 CP	CCT Directed Clinical Education-I	-	-	-	27	9	-	-	-	405	405	-	50	50
Practical														
BCCT113 P	Basic Electrocardiography	-	-	2	-	1	-	-	30	-	30	10	40	50
BCCT114 P	Basic Echocardiography	-	-	4	-	2	-	-	60	-	60	10	40	50
Generic Elective Course														
GEC 001 L	Pursuit of Inner Self Excellence (POIS)	3	-	-	-	3	45	-	-	-	45	10	40	50
GEC 002 L	Organisational Behaviour													
Total		11	1	6	27	24	180	0	90	405	675	90	410	500

OUTLINE OF COURSE CURRICULUM														
B.Sc. Cardiac 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														
BCCT 116 L	Development of Cardiovascular system : Fetal & Neonatal	2	1	-	-	3	45	-	-	-	45	20	80	100
BCCT 117 L	Cardiovascular diseases pertinent to Cardiac care technology	2	1	-	-	3	45	-	-	-	45	20	80	100
BCCT 118 L	Medical Instrumentation relevant to Cardiac care	1	1	-	-	2	30	-	-	-	30	20	80	100
BCCT 119 CP	CCT Directed Clinical Education-II	-	-	-	27	9	-	-	-	405	405	-	50	50
Practical														
BCCT 118 P	Medical Instrumentation relevant to Cardiac care	-	-	8	-	4	-	-	60	-	60	20	80	100
Ability Enhancement Elective Course														
AEC 003 L	Computer and Applications	3	-	-	-	3	45	-	-	-	45	10	40	50
AEC 004 L	Biostatistics and Research Methodology													
Total		8	3	8	27	24	165	0	60	405	630	90	410	500

OUTLINE OF COURSE CURRICULUM														
B.Sc. Cardiac Care 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
Theory														
BCCT 120 L	Advanced Electrocardiography	2	-	-	-	2	30	-	-	-	30	20	80	100
BCCT 121 L	Advanced Echocardiography	2	-	-	-	2	30	-	-	-	30	20	80	100
BCCT 122 L	Invasive Cardiology	2	1	-	-	3	45	-	-	-	45	20	80	100
BCCT 123 CP	CCT Directed Clinical Education-III	-	-	-	24	8	-	-	-	360	360	-	50	50
Practical														
BCCT 120 P	Advanced Electrocardiography	-	-	4	-	2	-	-	60	-	60	10	40	50
BCCT 121 P	Advanced Echocardiography	-	-	4	-	2	-	-	60	-	60	10	40	50
Core Elective Course														
CEC 005 L	Basics of Clinical Skill Learning	3	-	-	-	3	45	-	-	-	45	10	40	50
CEC 006 L	Hospital Operation Management													
Total		9	1	8	24	22	150	0	120	360	630	90	410	500

OUTLINE OF COURSE CURRICULUM														
B.Sc. Cardiac Care 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
Theory														
BCCT 124 L	Cardiac Catheterization	2	-	-	-	2	30	-	-	-	30	20	80	100
BCCT 125 L	Pediatric Interventions	2	-	-	-	2	30	-	-	-	30	20	80	100
BCCT 126 L	CCT Directed Clinical Education-IV	-	-	-	30	10	-	-	-	450	450	-	50	50
Practical														
BCCT 124 P	Cardiac Catheterization	-	-	4	-	2	-	-	60	-	60	10	40	50
BCCT 125 P	Pediatric Interventions	-	-	4	-	2	-	-	60	-	60	10	40	50
Total		4	0	8	30	18	60	0	120	450	630	60	290	350

OUTLINE OF COURSE CURRICULUM

B.Sc. Cardiac Care 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 Assessment (IA)	Semester End Exam (SEE)	Total
BCCT 127	B.Sc. CCT Internship (Semester VII)	-	-	1	16	17	-	-	42	1008	1050	20	80	100
BCCT 128	B.Sc. CCT 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	3 x 5=15 M	76-80	6
Log Book	5 marks	Q No 3	VIVA	15 M	81-85	7
Total = 20 Marks		QNo 4	Log Book	10 M	86-90	8
		QNo 5	Attendance	10 M	91-95	9
		Total = 80 Marks			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
Total				20 marks

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
Section A				
Structured LAQ	3	2	2X8	16 Marks
Short notes	8	6	6X4	24Marks
Total				40 Marks

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:**

Sr. No.	Core Competencies	Marks Allotted	Marks Obtained
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	
Total Marks		50	

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

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

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
Section 1				
MCQ	10	10	10x1	10 marks
Section 2				
Structured LAQ	3	2	2x15	30 marks
Short notes	6	5	5 x 8	40 marks
				Total= 80 Marks

General Instructions (Theory):

- A. Time duration of each Theory Paper will be of Three (3) Hrs or 1 1/2 hrs as the case may be.
- B. Total Marks of each Theory Paper will be 80 Marks / 40 Marks.
- C. 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.
- D. Both the Sections are compulsory.
- E. Both the sections are to be written in the separate answer sheet

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

Exercise	Description	Marks
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
		Total = 40 M

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**

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

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)**

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

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.		
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: _____