MANIPAL
ACADEMY of HIGHER EDUCATION
(Institution of Eminence Deemed to be University)

Manipal College of Health Professions

Manipal Academy of Higher Education, Manipal

Outcome-Based Education (OBE) Framework

Four Years Full Time

Undergraduate Program

Bachelor of Science in Medical Imaging Technology (BSc. MIT)

With effect from July 2024

Clinical Work:

Students will be receiving extensive hands-on clinical experience throughout the program, supported by experienced Medical Imaging technologists in radiology departments for the following:

- Performing all types of routine radiographs including portable, handling different trauma and forensic cases
- Performing conventional radiography, mammography, advanced Computed Radiography, Digital Radiography and PACS
- Assisting in Ultrasonography and Ultrasound guided procedures.
- Performing and assisting all the routine, emergency and special cases in CT scan.
- Performing and assisting all routine, emergency and special cases of MRI scans.
- Assisting in Image guided procedures.

2. PROGRAM EDUCATION OBJECTIVES (PEOs)

The overall objective of the learning outcome-based curriculum framework (LOCF) for Bachelor of Science in Medical Imaging Technology (BSc. MIT) Program are as follows:

PEO No.	Education Objective
PEO 1	Students will be able to use their fundamental knowledge and technical competence in Radiology and Imaging field as and when required to achieve professional excellence.
PEO 2	Students will demonstrate strong and well defined practical skills in equipment's available in the field of radio-diagnosis and imaging
PEO 3	Students will be able to practice the profession with a highly professional and ethical attitude, strong communication skills, and effective professional skills to work in a inter-disciplinary team.
PEO 4	Students will be able to use interpersonal and collaborative skills in providing imaging services to the patient
PEO 5	Students will be able to imbibe the culture of research, innovation, entrepreneurship and incubation.
PEO 6	Students will be able to participate in lifelong learning process for a highly productive career and will be able to relate the concepts of radiation physics and Imaging science towards serving the cause of the society.

5. PROGRAM OUTCOMES (POs)

After successful completion of Bachelor / BSc Medical Imaging Technology program, students will be able to:

PO No.	Attribute	Competency
PO 1	**Professional knowledge**	Possess and acquire **scientific knowledge** to work as a health care professional
PO 2	**Clinical/ Technical skills**	Demonstrate and possess **clinical skills** to provide quality health care services
PO 3	**Team work**	Demonstrate **team work skills** to support shared goals with the interdisciplinary health care team to improve societal health
PO 4	**Ethical value & professionalism**	Possess and demonstrate **ethical values and professionalism** within the legal framework of the society
PO 5	**Communication**	**Communicate effectively** and appropriately with the interdisciplinary health care team and the society
PO 6	**Evidence based practice/learning**	Demonstrate high quality **evidence based practice/learning** that leads to excellence in professional practice
PO 7	**Life-long learning**	Enhance knowledge and skills with the use of advancing technology for the **continual improvement** of professional practice
PO 8	**Entrepreneurship, leadership and mentorship**	Display **entrepreneurship, leadership and mentorship** skills to practice independently as well as in collaboration with the interdisciplinary health care team

6. Course structure, course wise learning objective, and course outcomes (COs)

SEMESTER - I

Course code	Course title	Credit distribution (L,T,P are hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	TOTAL
ANA1301	Anatomy - I	3	-	-	-	3	30	70	100
PHY1301	Physiology - I	2	-	-	-	2	30	70	100
EIC1501	Environmental Science and Indian Constitution	2	-	-	-	2	100	-	100
CSK1501	Communication Skills	2	-	-	-	2	100	-	100
MIT1301	Radiation Physics	2	1	-	-	3	50	50	100
MIT1302	Radiographic Positioning and Techniques - I	2	1	-	-	3	50	50	100
MIT1303	Image Evaluation and Interpretation of Radiographs- I	2	-	-	-	2	100	-	100
MIT1304	Clinical Aspect of Radiographic Positioning and Techniques - I	-	-	-	9	3	50	50	100
	TOTAL	**15**	**2**	**-**	9	**20**	**510**	**290**	**800**

Note:
- ESE for ANA1301, PHY1301 will be conducted for 50 marks and normalized to 70 marks
- ESE for MIT1301, MIT1302, MIT1304 will be conducted for 100 marks and normalized to 50 marks

SEMESTER - II

Course code	Course title	Credit distribution (L,T,P are hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	TOTAL
ANA1401	Anatomy - II	2	-	-	-	2	30	70	100
PHY1401	Physiology - II	2	-	-	-	2	30	70	100
BIC1401	Biochemistry	3	-	-	-	3	30	70	100
MIT1401	Radiographic Positioning and Techniques - II	2	1	-	-	3	50	50	100
MIT1402	Digital Imaging & Image Processing Methods in Radiography	2	1	-	-	3	50	50	100
MIT1403	Image Evaluation and Interpretation of Radiographs - II	2	-	-	-	2	100	-	100
MIT1404	Clinical Aspect of Radiographic Positioning and Techniques - II	-	-	-	15	5	50	50	100
	TOTAL	**13**	**2**	**-**	**15**	**20**	**340**	**360**	**700**

Note:
- ESE for ANA1401, PHY1401 and BIC1401 will be conducted for 50 marks and normalized to 70 marks.
- ESE for MIT1401, MIT1402, MIT1404 will be conducted for 100 marks and normalized to 50 marks.

***Note:** By the end of the first year, a student needs to complete a life skill training course offered by the university.

SEMESTER - III

Course code	Course title	Credit distribution (L,T,P are hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	TOTAL
PAT2303	Pathology	3	-	-	-	3	30	70	100
MCB2301	Microbiology	2	-	-	-	2	30	70	100
SUR4301	General Surgery	3	-	-	-	3	30	70	100
MIT2301	Orthopedics in Radiology	2	-	-	-	2	100	-	100
MIT2302	Radiographic Special Procedures	3	1	-	-	4	50	50	100
MIT2303	Clinical Aspect of Radiographic Special Procedures	-	-	-	9	3	50	50	100
*** ****	Open Elective - I	3	-	-	-	3	S/NS		
	TOTAL	**16**	**1**	**-**	**9**	**20**	**290**	**310**	**600**

Note:
ESE for PAT2303, MCB2301 and SUR4301 will be conducted for 50 marks and normalized to 70 marks
ESE for MIT2302 and MIT2303 will be conducted for 100 marks and normalized to 50 marks

SEMESTER IV

Course code	Course title	Credit distribution (L,T,P are hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	TOTAL
PHC2403	Pharmacology	3	-	-	-	3	30	70	100
GPY2401	General Psychology	2	-	-	-	2	30	70	100
MED3401	General Medicine	3	-	-	-	3	30	70	100
MIT2401	Radiation Safety in Radio Diagnosis	3	1	-	-	4	50	50	100
MIT2402	Clinical Aspect of Radiography and Fluoroscopy	-	-	-	15	5	50	50	100
MIT****	Program Elective - I	2	1	-	-	3	50	50	100
	TOTAL	**13**	**2**	**-**	**15**	**20**	**240**	**360**	**600**

Note:
- ESE for PHC2403, GPY2401, MED3401 will be conducted for 50 marks and normalized to 70 marks
- ESE for MIT2401, MIT2402 will be conducted for 100 marks and normalized to 50 marks

SEMESTER - V

Course code	Course title	Credit distribution (L,T,P are hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	TOTAL
MIT3301	Physics of Ultrasound	2	1	-	-	3	50	50	100
MIT3302	Computed Tomography - I	2	-	-	-	2	50	50	100
MIT3303	Magnetic Resonance Imaging - I	1	1	-	-	2	50	50	100
MIT3304	Specialized Imaging Modalities	2	1	-	-	3	50	50	100
MIT3305	Patient Care and Ethics in Radio-diagnosis	2	-	-	-	2	100	-	100
MIT3306	Clinical Aspect of Specialized Imaging Modalities	-	-	-	15	5	50	50	100
*** ****	Open Elective - II	3	-	-	-	3	S/NS		
	TOTAL	**12**	**3**	**-**	**15**	**20**	**350**	**250**	**600**

Note:
- ESE for MIT3301, MIT3304, MIT3306 will be conducted for 100 marks and normalized to 50 marks
- ESE for MIT3302, MIT3303 will be conducted out of 50 marks only.

SEMESTER VI

Course code	Course title	Credit distribution (L,T,P are hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	TOTAL
BST3401	Biostatistics and Research Methodology	3	-	-	-	3	30	70	100
MIT3401	Computed Tomography - II	2	1	-	-	3	50	50	100
MIT3402	Magnetic Resonance Imaging - II	2	1	-	-	3	50	50	100
MIT3403	Cross Sectional Anatomy in CT and MRI	2	-	-	-	2	100	-	100
MIT3404	Clinical Aspect of CT & MRI	-	-	-	18	6	50	50	100
MIT****	Program Elective - II	2	1	-	-	3	50	50	100
	TOTAL	**11**	**3**	**-**	**18**	**20**	**330**	**270**	**600**

Note:
- ESE for MIT3401, MIT3402 and MIT3404 will be conducted for 100 marks and normalized to 50.
- ESE for BST3401 will be conducted for 100 marks and normalized to 70 marks

PROGRAM ELECTIVES

Program elective is credited and choice-based. The students make a choice from the pool of electives offered by the department. The ESE is conducted for 50 marks.

IV Semester

Course code	Course title	Credit distribution (L,T,P are hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	TOTAL
MIT2403	Advanced Image Guided Procedures	2	1	-	-	3	50	50	100
MIT2404	Basic in Nuclear Medicine Technology	2	1	-	-	3	50	50	100

VI Semester

Course code	Course title	Credit distribution (L,T,P are hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	TOTAL
MIT3405	Forensic Radiography	2	1	-	-	3	50	50	100
MIT3406	Emergency Radiography	2	1	-	-	3	50	50	100

SEMESTER - VII and VIII

Internship

Semester VII	**Internship - I**	Duration 6 months 48 hours in a week / 8 hours in a day
Semester VIII	**Internship - II**	Duration 6 months 48 hours in a week / 8 hours in a day

OVERALL CREDIT DISTRIBUTION

Semester	Hours per week				Total Credits	Marks		
	L	T	P	CL		IAC	ESE	Total
Semester - I	15	2	-	9	20	510	290	800
Semester - II	13	2	-	15	20	340	360	700
Semester - III	16	1	-	9	20	290	310	600
Semester - IV	14	1	-	15	20	240	360	600
Semester - V	12	3	-	15	20	350	250	600
Semester - VI	11	3	-	18	20	330	270	600
Semester - VII	-	-	-	48	Na	-	-	-
Semester - VIII	-	-	-	48	Na	-	-	-
				Total	**120**	**2060**	**1840**	**3900**