

Post Revision

STUDY & EVALUATION SCHEME OF
MASTER OF SCIENCE
IN
RADIOLOGICAL IMAGING TECHNIQUES
(M.Sc. RIT)

[APPLICABLE W.E.F. ACADEMIC SESSION - 2019-20 TILL REVISED]
[As per CHOICE BASED CREDIT SYSTEM (CBCS) guidelines given by UGC]



TEERTHANKER MAHAVEER UNIVERSITY
COLLEGE OF PARAMEDICAL SCIENCES

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M.Sc. RIT: Two Year (4 Semester) CBCS Programme			
Basic Structure : Distribution of Courses			
S.No	Type of Course	Credit Hours	Total Credits
1	Core Course (CC)	6 Courses of 3 Credit Hrs. each (Total Credit Hrs. 6x3)= 18	18
2	Discipline Specific Course (DSC)	5 Courses of 3 Credit Hrs. each (Total Credit Hrs. 5x3)= 15	15
3	Skill-Enhancement Course (SEC)	2 Courses of 9 Credit Hrs. each (Total Credit Hrs. 2x9)= 18	49
		1 Courses of 2 Credit Hrs. each (Total Credit Hrs. 1x2)= 2	
		2 Courses of 10 Credit Hrs. each (Total Credit Hrs. 2x10)=20	
		9 Courses of 1 Credit Hrs. each (Total Credit Hrs. 9x1)= 9	
4	Compulsory Specified Course (CSC)	1 Course of 3 Credit Hrs. each (Total Credit Hrs. 1x3)=3	3
TOTAL			85

❖ CHOICE BASED CREDIT SYSTEM (CBCS)

Choice Based Credit System (CBCS) is a versatile and flexible option for each student to achieve his target number of credits as specified by the UGC and adopted by our University.

The following is the course module designed for the M.Sc. RIT program:

- ✓ **Core Course (CC):** Core courses of M.Sc. RIT program will provide a holistic approach to clinical or practical education, giving students an overview of the field, a basis to build and specialize upon. These core courses are the strong foundation to establish radiographic knowledge and provide broad multi-disciplined knowledge can be studied further in depth during the elective phase.

The core courses will provide more practical-based knowledge, case-based lessons and collaborative learning models. It will train the students to analyze, decide, and lead-rather than merely know-while creating a common student experience that can foster deep understanding, develop decision-making ability and contribute to the hospital and community at large.

A wide range of core courses provides groundwork in the basic hospital management disciplines, patient care handling, responsible radiographer, organizational behavior and human resources etc.

The integrated foundation is important for students because it will not only allow them to build upon existing skills, but they can also explore career options in a range of industries, and expand their understanding of various fields.

The College offers six core courses from first to fourth semester during the M.Sc. RIT program. Each core course will carry 3 credits as already described in above table.



equipped to work across time zones, languages, and cultures. Employability, innovation, theory to practice connectedness to the professional staff is the central focus of M.Sc. RIT curriculum. The curriculum is designed as such that the students can gain an in-depth mastery of the academic disciplines and applied functional areas necessary to meet the requirements of academic and hospital administration.

The College emphasis on the following courses ***balanced with core, and other courses***: The curriculum of Master of Science in Radiological Imaging Techniques program emphasizes an intensive, flexible education with 36 credits for theory and 49 credits of practical & clinical posting programme. Total 85 credits are assigned for the M.Sc. RIT degree.

The programme structure and credits for Master of Science in Radiological Imaging Techniques are finalized based on the stake holder's requirements and general structure of the programme. Out of 85 credits of classroom contact teaching, 18 credits are to be allotted for core courses(CC), 49 credits are allotted to Skill Enhancement Courses (SEC), 3 credits are allotted to Compulsory Specifies Course (CSC), 15 credits are allotted to Discipline specific Course(DSC).

MAINTENANCE OF LOG BOOK

✓	Every Post Graduate student shall maintain a record of skills he /she has acquired during the two years training period certified by the various Head of departments where he /she has under gone training including outside the institution.
✓	The student should also participate in the teaching and training programs of Under Graduate students of Paramedical courses, both in Theory and Practical from the first year onwards of the Post Graduate Degree course.
✓	In addition the Head of the department should involve their post graduate students in Seminars, Journal clubs, group discussions and participation in work sops, national and international conferences organized by the Department, Institution and outside the institution in the state and outside the state.
✓	Every Post Graduate student should be encouraged to present short title papers in conferences and improve on it and submit them for publication in indexed journals. Motivation by the Head of the Department of essential in this area to sharpen the skills of the Post Graduate students.
✓	The Head of the Department should scrutinize the log book every two months and certify the work done.
✓	At the end of the course the student should summarize the contents and get the log book certified by the Head of the Department and submit the log book at the time of the University Practical Examination.

Clinical Training Evaluation

✓	Students shall be deputed to CT, MRI, DR & USG department wherein they shall undergo practical training of handling patients, special procedures, interventional procedures .
✓	Each student is required to maintain a logbook of the training. Student's performance shall be evaluated on regular basis. The faculty shall submit the assessment records of each student posted in his/her section on monthly basis to the HOD. Marks will be awarded out of 100.

✓ **Skill Enhancement Course (SEC):** This course is designed to provide value-based and/or skill-based knowledge. The College offer fourteen two SECs from I Semester to IV Semester. Each SEC will carry different credits.

✓ **Compulsory Specified Course (CSC):** This is a compulsory course that does not have any choice and will be of 3 credits. Each student of M.Sc. RIT program has to compulsorily pass the CSC course.

┘ **PROGRAMME SPECIFIC OUTCOMES: (PSOs)**

The learning and abilities or skills that a student would have developed at the end:

PSO1.	Understanding the relationship between physics and radiology & modern imaging techniques.
PSO2.	Understanding laws/provisions for radiation safety by various regulatory bodies.
PSO3.	Applying the basic and advanced knowledge of hardware, software and applications of computers in health care systems.
PSO4.	Applying quality assurance, quality control measures, safety procedures and Maintenance of radiological equipments.
PSO5.	Analyzing the protocols to perform various Radiological Procedures
PSO6.	Evaluating the factors affecting technical quality of images and various pathological conditions.
PSO7.	Formulating plan for handling patient with drugs & equipments in general as well in emergency situation.

○ **Pedagogy & Unique practices adopted:** "Pedagogy is the method and practice of teaching, especially for teaching an academic subject or theoretical concept". In addition to conventional time-tested lecture method, the institute will **emphasize on experiential learning**.

1. Role Play & Simulation: Role-play and simulation are forms of experiential learning. Learners take on different roles, assuming a profile of a character or personality, and interact and participate in diverse and complex learning settings. Role-play and simulation function as learning tools for teams and groups or individuals as they "play" online or face-to-face. They alter the power ratios in teaching and learning relationships between students and educators, as students learn through their explorations and the viewpoints of the character or personality they are articulating in the environment. This student-centered space can enable learner-oriented assessment, where the design of the task is created for active student learning. Therefore role-play & simulation exercises such as virtual share trading, marketing simulation etc. are being promoted for the practical-based experiential learning of our students.

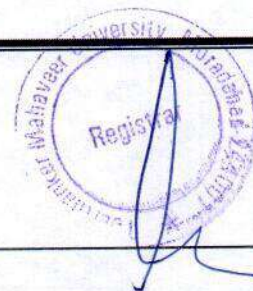
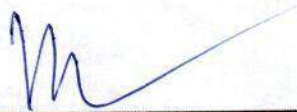
2. **Video Based Learning (VBL):** These days technology has taken a front seat and classrooms are well equipped with equipment and gadgets. Video-based learning has become an indispensable part of learning. Similarly, students can learn various concepts through educational or clinical videos. In fact, many teachers give examples from movies during their discourses. Making students learn few important theoretical concepts through VBL is a good idea and method. The learning becomes really interesting and easy as videos add life to concepts and make the learning engaging and effective. Therefore, our institute is promoting VBL, wherever possible.

3. **Special Guest Lectures (SGL)&Extra Moral Lectures (EML):** Some topics/concepts need extra attention and efforts as they either may be high in difficulty level or requires experts from specific industry/domain to make things/concepts clear for a better understanding from the perspective of the industry. Hence, to cater to the present needs of industry we organize such lectures, as part of lecture-series and invite prominent personalities from academia and industry from time to time to deliver their vital inputs and insights.

4. **Special assistance program for slow learners:** Write the note how would you identify slow learners, develop the mechanism to correcting knowledge gap. Terms of advance topics what learning challenging it will be provided to the fast learners

5. **Orientation program:** Two week programme is arranged to introduce students to college services which will support their educational and personal goals. To facilitate initial academic advisement, course selection and registration, creating an atmosphere that minimizes anxiety, promotes positive attitude and stimulates excitement for learning. It also helps knowledge of scope, information regarding academic and student service resources and programme. It provides a welcoming atmosphere for student's to meet faculty, staff and continuing students, as well as other new students.

6. **Extracurricular Activities:** Organizing& participation in extracurricular activities will be mandatory to help students develop confidence & face audience with care.



Study & Evaluation Scheme

M.Sc. RIT- I Semester

S.N O.	CATEGORY	COURSE CODE	COURSE NAME	PERIODS			CREDIT	EVALUATION SCHEME		
				L	T	P		INTERNAL	EXTERNAL	TOT AL
1	CC-1	MRIT101	RADIOLOGICAL PROCEDURES	3	-	-	3	40	60	100
2	DSC-1	MRIT102	INSTRUMENTATION OF CONVENTIONAL RADIOLOGICAL EQUIPMENTS	3	-	-	3	40	60	100
3	CC-2	MRIT103	PRINCIPLES OF RADIOGRAPHIC EXPOSURE	3	-	-	3	40	60	100
4	SEC-1	MRIT151	RADIOLOGICAL PROCEDURES (LAB)	-	-	4	2	50	50	100
5	SEC -2	MRIT152	INSTRUMENTATION OF CONVENTIONAL RADIOLOGICAL EQUIPMENTS (LAB)	-	-	2	1	50	50	100
6	SEC -3	MRIT153	PRINCIPLES OF RADIOGRAPHIC EXPOSURE (LAB)	-	-	2	1	50	50	100
7	SEC -4	MRIT154	CLINICAL POSTING	-	-	18	9	50	50	100
Total				9	-	26	22	320	380	700

Study & Evaluation Scheme

M.Sc. RIT- II Semester

S. No.	CATEGORY	COURSE CODE	COURSE	PERIODS			CREDI T	EVALUATION SCHEME		
				L	T	P		INTERNAL	EXTERNAL	TOT AL
1	CC-3	MRIT201	PATIENTS CARE IN DIAGNOSTIC RADIOLOGY	3	-	-	3	40	60	100
2	CC-4	MRIT202	RADIATION PROTECTION IN DIAGNOSTIC RADIOLOGY	3	-	-	3	40	60	100
3	DSC-2	MRIT203	INSTRUMENTATION OF SPECIALIZED RADIOLOGY EQUIPMENTS	3	-	-	3	40	60	100
4	SEC -5	MRIT251	PATIENTS CARE IN DIAGNOSTIC RADIOLOGY (LAB)	-	-	2	1	50	50	100
5	SEC -6	MRIT252	RADIATION PROTECTION IN DIAGNOSTIC RADIOLOGY (LAB)	-	-	2	1	50	50	100
6	SEC -7	MRIT253	INSTRUMENTATION OF SPECIALIZED RADIOLOGY EQUIPMENTS (LAB)	-	-	2	1	50	50	100
7	SEC -8	MRIT254	CLINICAL POSTING	-	-	18	9	50	50	100
TOTAL				9	0	24	21	320	380	700

Study & Evaluation Scheme

M.Sc. RIT- III Semester

S. N	CATEGORY	COURSE CODE	COURSE	PERIODS			CREDIT	EVALUATION SCHEME		
				L	T	P		INTERNAL	EXTERNAL	TOTAL
1	CSC-1	MRIT301	BASIC ELECTRONICS AND BIO-STATISTICS	3	-	-	3	40	60	100
2	DSC-3	MRIT302	ADVANCED TECHNIQUES AND INSTRUMENTATION OF CT	3	-	-	3	40	60	100
3	CC-5	MRIT303	INSTRUMENTATION OF SPECIALIZED RADIOLOGY EQUIPMENTS	3	-	-	3	40	60	100
4	SEC-9	MRIT351	ADVANCED TECHNIQUES AND INSTRUMENTATION OF CT (LAB)	-	-	2	1	50	50	100
5	SEC-10	MRIT352	INSTRUMENTATION OF SPECIALIZED RADIOLOGY EQUIPMENTS (LAB)	-	-	2	1	50	50	100
6	SEC-11	MRIT353	CLINICAL POSTING	-	-	20	10	50	50	100
Total				9	0	24	21	270	330	600

Study & Evaluation Scheme

M.Sc. RIT- IV Semester

S. NO.	CATEGORY	COURSE CODE	COURSE	PERIODS			CREDIT	EVALUATION SCHEME		
				L	T	P		INTERNAL	EXTERNAL	TOTAL
1	CC-6	MRIT401	ADVANCED TECHNIQUES AND INSTRUMENTATION OF ULTRASOUND	3	-	-	3	40	60	100
2	DSC-4	MRIT 402	ADVANCED TECHNIQUES AND INSTRUMENTATION OF MRI	3	-	-	3	40	60	100
3	DSC-5	MRIT 403	NUCLEAR MEDICINE IMAGING TECHNIQUES	3	-	-	3	40	60	100
4	SEC-12	MRIT451	ADVANCED TECHNIQUES AND INSTRUMENTATION OF ULTRASOUND (LAB)	-	-	2	1	50	50	100
5	SEC-13	MRIT452	ADVANCED TECHNIQUES AND INSTRUMENTATION OF MRI (LAB)	-	-	2	1	50	50	100
6	SEC-14	MRIT453	DISSERTATION WRITING	-	-	20	10	50	50	100
Total				9	-	24	21	270	330	600






TEERTHANKER MAHAVEER UNIVERSITY

(Established under Govt. of U.P. Act No.30, 2008) Delhi Road, Moradabad (U.P)

Study & Evaluation Scheme of Master of Science in Radiography and Imaging Technology (M.Sc. RIT)

Programme: Master of Science in Radiography and Imaging Technology (M.Sc. RIT)

Duration: Two year (04 Semester) full time programme

Medium: English

Maximum Credits: 85

Minimum Credits: 85



1. Eligibility for admissions:

A candidate seeking admission to M.Sc. Radiography and Imaging Technology course must have passed bachelors degree of minimum 3 years duration in Medical Imaging Technology/ Radiography and Imaging Technology, recognized as equivalent by Teerthanker Mahaveer University, with not less than 50 % marks in aggregate.

Foreign Nationals and candidates who have qualified from a Foreign University/Board should obtain prior permission from Teerthanker Mahaveer University for equivalence of the qualification.

2. Selection of eligible candidates:

Selection to the M.Sc. (Radiography and Imaging Technology), course shall be on the performance in written exam or interview conducted by Teerthanker Mahaveer University. Medical fitness certificate needs to be submitted by the candidate on the day of Admission.

3. Withdrawal -Temporary and Permanent:

Temporary:

A candidate who has been admitted to the course may be permitted to withdraw temporarily for a period of six months or more up to one year on the grounds of prolonged illness, grave calamity in the family etc. provided:

- He applies stating the reason of withdrawal with supporting documents and endorsement by parent/guardian.
- The University is satisfied that without counting the period of withdrawal candidate is likely to complete his requirement of the degree within maximum time specified.

M.Sc Radiography and Imaging Technology, syllabus w.e.f 2018-19



7. Study & Evaluation Scheme:

M.Sc. RIT - I Semester

S. No.	Course Code	Subject	Period			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	MRIT 101	Radiographic Procedures	3	-	-	3	40	60	100
2	MRIT 102	Instrumentation of Conventional Radiology Equipments	3	-	-	3	40	60	100
3	MRIT 103	Principles of Radiographic Exposure	3	-	-	3	40	60	100
4	MRIT 111	Radiographic Procedures	-	-	4	2	50	50	100
5	MRIT 121	Instrumentation of Conventional Radiology Equipments	-	-	2	1	50	50	100
6	MRIT 131	Principles of Radiographic Exposure	-	-	2	1	50	50	100
7	MRIT 141	Clinical Posting	-	-	18	9	50	50	100
Total			9	00	26	22	320	380	700


Note: One hour per week is designated for library.



M.Sc. RIT - II Semester

S. No.	Course Code	Subject	Period			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	MRIT 201	Patients Care In Diagnostic Radiology	3	-	-	3	40	60	100
2	MRIT 202	Radiation Evaluation and Protection In Diagnostic Radiology	3	-	-	3	40	60	100
3	MRIT 203	Interventional Radiology Techniques	3	-	-	3	40	60	100
4	MRIT 211	Patients Care In Diagnostic Radiology	-	-	2	1	50	50	100
5	MRIT 221	Radiation Evaluation and Protection In Diagnostic Radiology	-	-	2	1	50	50	100
6	MRIT 231	Interventional Radiology Techniques	-	-	2	1	50	50	100
7	MRIT 241	Clinical Posting	-	-	18	9	50	50	100
Total			9	00	24	21	320	380	700

Note: Two hours per week are designated for seminars and one hour per week is designated for library.




M.Sc. RIT – III Semester

S. No.	Course Code	Subject	Period			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	MRIT 301	Basic Electronics and Bio-statistics	3	-	-	3	40	60	100
2	MRIT 302	Advanced Techniques and Instrumentation of CT	3	-	-	3	40	60	100
3	MRIT 303	Instrumentation of Specialized Radiology Equipments	3	-	-	3	40	60	100
4	MRIT 351	Advanced Techniques and Instrumentation of CT	-	-	2	1	50	50	100
5	MRIT 352	Instrumentation of Specialized Radiology Equipments	-	-	2	1	50	50	100
6	MRIT 353	Clinical Posting	-	-	20	10	50	50	100
Total			9	00	24	21	270	330	600

Note: Two hours per week are designated for Journal clubs, seminars and one hour per week is designated for library.




M.Sc. RIT – IV Semester

S. No.	Course Code	Subject	Period			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	MRIT 401	Advanced Techniques and Instrumentation of Ultrasound	3	-	-	3	40	60	100
2	MRIT 402	Advanced Techniques and Instrumentation of MRI	3	-	-	3	40	60	100
3	MRIT 403	Nuclear Medicine Imaging Techniques	3	-	-	3	40	60	100
4	MRIT 451	Advanced Techniques and Instrumentation of Ultrasound	-	-	2	1	50	50	100
5	MRIT 452	Advanced Techniques and Instrumentation of MRI	-	-	2	1	50	50	100
6	MRIT 453	Dissertation Writing	-	-	20	10	50	50	100
Total			9	00	24	21	270	330	600

Note: Two hours per week are designated for Journal clubs, Seminars and one hour per week is designated for library.