Name of Faculty: Faculty of Engineering and Technology
Name of the Department: Institute of Biosciences & Technology
Name of the Programme: M. Tech. Biotechnology
Programme Type (UG/PG): PG
Duration: 2 Years

First Year (Semester I)													
Course Category	Course Code	Course Title	Nature of Course	No. of Credits	Teaching (Contact hrs/ week)		Evaluation Scheme (Marks)			Minimum Passing (Marks)			
					L	P	Internal	External	Total	Internal	External	Total	
MM	MTB42MML101	Molecular Biology & Recombinant DNA Technology	Lecture	2	2	-	60	40	100	-	16	40	
MM	MTB42M ML102	Bioprocess Engineering & Fermentation Technology	Lecture	2	2	-	60	40	100	-	16	40	
MM	MTB42M ML103	Bioinformatics & Computational Biology	Lecture	2	2	-	60	40	100	-	16	40	
MM	MTB42M ML104	AI & ML Essentials	Lecture	3	3	-	60	40	100	-	16	40	
RM	MTB42RM L101	Research Process and Methodology	Lecture	2	2	-	60	40	100	-	16	40	
ME		Elective-I	Lecture	2	2	-	60	40	100	-	16	40	
ME		Elective-II	Lecture	2	2	-	60	40	100	-	16	40	
MM	MTB42M MP101	Molecular Biology & Recombinant DNA Technology Lab	Practical	2		4	60	40	100	-	16	40	
MM	MTB42M MP102	Bioprocess Engineering & Fermentation Technology	Practical	3	-	6	60	40	100	-	16	40	
Total				**20**	**15**	**10**	**540**	**360**	**900**	-	**-**	**-**	

Nature of Course: *MM- Major Mandatory, ME- Major Elective, L- Lecture, P- Practical, RP- Research Project, RM-Research Mandatory, D-Dissertation

List of Elective Courses

Elective-I

1. Biopharma Packaging, Logistics & Cold Chain - MTB42MEL101
2. AI in Drug Discovery & Biologics - MTB42MEL102
3. mRNA Vaccine Design & Development - MTB42MEL103

Elective-II

1. Nano Biotechnology & Toxicology - MTB42MEL104
2. Enzyme Technology & Industrial Application - MTB42MEL105
3. Regenerative Medicine & Translational Research - MTB42MEL106

First Year (Semester II)												
Course Category	Course Code	Course Title	Nature of Course	No. of Credits	Teaching (Contact hrs/ week)		Evaluation Scheme (Marks)			Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	MTB42MML105	Biomanufacturing of Biologics & Biosimilars	Lecture	2	2	-	60	40	100	-	16	40
MM	MTB42MML106	Genomics & Proteomics	Lecture	2	2	-	60	40	100	-	16	40
MM	MTB42MML107	Machine Learning Engineering Lab	Lecture	3	3	-	60	40	100	-	16	40
RM	MTB42RM L102	Bioethics, Biosafety and IPR	Lecture	2	2	-	60	40	100	-	16	40
ME		Elective-III	Lecture	2	2	-	60	40	100	-	16	40
ME		Elective-IV	Lecture	2	2	-	60	40	100	-	16	40
MM	MTB42MMP103	Biomanufacturing Lab	Practical	3	-	6	60	40	100	-	16	40
MM	MTB42MMP104	Omics & Bioinformatics Lab	Practical	3	-	6	60	40	100	-	16	40
MM	MTB42MMP105	Machine Learning Engineering Lab	Practical	1	-	2	60	40	100	-	16	40
Total				**20**	**13**	**14**	**540**	**360**	**900**	-	-	-

Nature of Course: *MM- Major Mandatory, ME- Major Elective, L- Lecture, P- Practical, RP- Research Project, RM-Research Mandatory, D- Dissertation

List of Elective Courses

Elective-III

1. Advanced Biotherapeutics - MTB42MEL107
2. Downstream Processing & Purification - MTB42MEL108
3. Biopharmaceuticals: Fundamentals & Product Classes - MTB42MEL109

Elective-IV

1. Monoclonal Antibodies & Biosimilar
2. Development - MTB42MEL110
3. Bioeconomy and Biorefineries - MTB42MEL111
4. Diagnostic Techniques in Biotechnology - MTB42MEL112

Second Year (Semester III)												
Course Category	Course Code	Course Title	Nature of Course	No. of Credits	Teaching (Contact hrs/ week)		Evaluation Scheme (Marks)			Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	MTB42M ML201	Deep Learning	Lecture	3	2	-	60	40	100	-	16	40
MM	MTB42M MP201	Deep Learning Lab	Practical	1	-	2	60	40	100	-	16	40
RP	MTB42R PD201	Dissertation-I	Dissertation	12	-	26	120	80	200	-	32	80
Total				**16**	**2**	**28**	**240**	**160**	**400**	-	-	-

Nature of Course: *MM- Major Mandatory, ME- Major Elective, L- Lecture, P- Practical, RP- Research Project, RM-Research Mandatory, D-Dissertation

Second Year (Semester IV)													
Course Category	Course Code	Course Title	Nature of Course	No. of Credits	Teaching (Contact hrs/ week)		Evaluation Scheme (Marks)			Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	MTB42MM L202	Applied Large Language Model Development and Deployment	Lecture	3	2	-	60	40	100	-	16	40
MM	MTB42MM P202	Applied Large Language Model Development and Deployment Lab	Practical	1	-	2	60	40	100	-	16	40
RP	MTB42R PD202	Dissertation-II	Dissertation	12	-	26	120	80	200	-	32	80
Total				**16**	**2**	**28**	**240**	**160**	**400**	**-**	**-**	**-**