

Component	Credits	Courses	
1. University Core (3 Courses)	06	UC 23.101 Human Values & Professional Ethics UC 23.102 Pragmatic English Communication UC 25.202 Management and Entrepreneurship	
2. University Elective (2 Courses)	06	Mody university Elective I Mody University Elective II	
3. Basic Science (09 Courses)	25	MA 23.105 Basic Mathematics CY 23.101 Engineering Chemistry CY 23.111 Chemistry Laboratory CY 23.102 Environmental Sciences MA 23.102 Applied Mathematics I	PY 23.101 Engineering Physics PY 23.111 Physics Laboratory MA 23.201 Applied Mathematics-II BM 23.101 Biology for Engineers
4. Engineering Science (10 Courses)	20	EC 25.101 Basics of Electronics Engineering EC 23.111 Electronics Laboratory ME 23.111 Computer Aided Engineering Drawing EE 25.101 Basics of Electrical Engineering EE 23.111 Electrical Laboratory	CS 23.101 Programming for Problem Solving I CS 23.111 Programming Laboratory I ME 23.111 Mechanical Workshop CS 23.205 General Purpose Programming CS 23.255 General Purpose Programming laboratory
5. Program Core (30 Courses)	67	BM 23.201 Human Anatomy and Physiology BM 23.203 Biomedical Transducers and Sensors BM 23.202 Monitoring and Diagnostic Equipment BM 23.204 Microbiology and Pathology BM 23.206 Biomedical Signals and Systems EC 23.201 Electronic Devices and Circuits EC 23.202 Digital Electronics EC 23.204 Integrated Circuits and Applications EC 23.301 Microprocessor and Microcontroller BM 23.301 Biomaterials BM 23.303 Medical Imaging Systems BM 23.305 Biomedical Signal Processing BM 23.302 Therapeutic and Surgical Equipment BM 23.304 Medical Image Processing BM 23.306 Biomechanics BM 23.308 Physiological control System BM 23.310 Hospital Planning and Engineering	BM 23.221 Anatomy and Physiology Laboratory BM 23.223 Biomedical Transducer and Sensors Laboratory BM 23.222 Monitoring and Diagnostic Equipment Laboratory BM 23.224 Microbiology and Pathology Laboratory EC 23.221 Electronic Devices and circuit Laboratory EC 23.224 Digital Electronics Laboratory EC 23.222 Integrated Circuits and Applications Laboratory EC 23.325 Microprocessor and Microcontroller Laboratory BM 23.221 Biomaterials Laboratory BM 23.225 Biomedical Signal Processing Laboratory BM 23.322 Therapeutic and Surgical Equipment Laboratory BM 23.324 Medical Image Processing Laboratory BM 23.312 Data Analysis in Healthcare
6. Program Elective / MOOCs (5 Courses)	15	MOOC – 01 Program Elective – 04	
7. Project / Summer Internship/ Colloquium/ (11 Courses)	21	Summer Internship – 02 Colloquium – 01	Project – 02 Capstone Project – 02 PBL - 04
8. Proficiency (Non- Credit / Non-Graded) (4 Courses)	00	SEFS – 04	
Total	160	72 Courses	

First Year - Autumn Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.101	Human Values & Professional Ethics	2	0	0	2	3	10	40	50
MA 23.105	Basic Mathematics	3	1	0	4	3	10	40	50
CY 23.101	Engineering Chemistry	3	0	0	3	3	10	40	50
BM 23.101	Biology for Engineers	3	0	0	3	3	10	40	50
EC 25.101	Basics of Electronics Engineering	3	0	0	3	3	10	40	50
ME 23.111	Computer Aided Engineering Drawing	0	0	4	2	2	50		50
CY 23.111	Chemistry Laboratory	0	0	2	1	2	50		50
EC 23.111	Electronics Laboratory	0	0	2	1	2	50		50
CY 23.102	Environmental Sciences	2	0	0	2	3	10	40	50
PB 25.101	Project Based Learning I	0	0	2	1	0	50		50
SF 101	Personal Grooming and Fine Dining (Non-Credit)	0	0	2	1	1	50		50
	Total	16	1	12	22				

First Year - Spring Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.102	Pragmatic English Communication	2	0	0	2	3	10	40	50
MA 23.106	Applied Mathematics-I	3	1	0	4	3	10	40	50
PY 23.101	Engineering Physics	3	0	0	3	3	10	40	50
EE 25.101	Basics of Electrical Engineering	3	0	0	3	3	10	40	50
CS 23.101	Programming for Problem Solving I	3	0	0	3	3	10	40	50
CS 23.111	Programming Laboratory	0	0	4	2	2	50		50
PY 23.111	Physics Laboratory	0	0	2	1	2	50		50
EE 23.111	Electrical Laboratory	0	0	2	1	2	50		50
ME 23.112	Mechanical Workshop	0	0	2	1	2	50		50
PB 25.102	Project Based Learning II	0	0	2	1	0	50		50
SF 102	Social Grooming, Home & Décor and Business Communication (Non-Credit)	0	0	2	1	1	50		50
	Total	14	1	14	21				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credit	22	21							43

Second Year- Autumn Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
MA 23. 205	Applied Mathematics-II	3	1	0	4	3	10	40	50
CS 23.205	General Purpose Programming	3	0	0	3	3	10	40	50
EC 23.201	Electronic Devices and Circuits	3	0	0	3	3	10	40	50
BM 23.201	Human Anatomy and Physiology	3	0	0	3	3	10	40	50
BM 23.203	Biomedical Transducer and Sensors	3	0	0	3	3	10	40	50
CS 23.255	General Purpose Programming laboratory	0	0	2	1	2	50		50
EC 23.221	Electronic Devices and Circuits Laboratory	0	0	2	1	2	50		50
BM 23.221	Anatomy and Physiology Laboratory	0	0	2	1	2	50		50
BM 23.223	Biomedical Transducer and Sensors Laboratory	0	0	2	1	2	50		50
PB 25.201	Project Based Learning III	0	0	2	1	0	50		50
SF 201	Personal Grooming Fine Dining and Home Safety (Non-Credit & Grade)	0	0	2	1	2	50		50
	Total	15	1	12	21				

Second Year – Spring Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 25.202	Management and Entrepreneurship	2	0	0	2	3	10	40	50
	University Elective-I	3	0	0	3	3	10	40	50
EC 23.202	Digital Electronics	3	0	0	3	3	10	40	50
EC 23.204	Integrated Circuits and Applications	3	0	0	3	3	10	40	50
BM 23.202	Monitoring and Diagnostic Equipment	3	0	0	3	3	10	40	50
BM 23.204	Microbiology and Pathology	3	0	0	3	3	10	40	50
BM 23.206	Biomedical Signals and Systems	3	1	0	4	3	10	40	50
EC 23.224	Digital Electronics Laboratory	0	0	2	1	2	50		50
EC 23.222	Integrated Circuits and Applications Laboratory	0	0	2	1	2	50		50
BM 23.222	Monitoring and Diagnostic Equipment Laboratory	0	0	2	1	2	50		50
BM 23.224	Microbiology and Pathology Laboratory	0	0	2	1	2	50		50
PB 25.202	Project Based Learning IV	0	0	2	1	0	50		50
SF 202	Social Grooming and Professional Skills (Non-credit, Non-Grade)	0	0	2	1	2	50		50
	Total	20	1	12	26				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credit	22	21	21	26					90

Project Based Learning (PBL) will be conducted in the group of 2-3 Students

Third Year Autumn Semester

Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)			
		L	T	P			CW	MTE	ETE
EC 23.301	Microprocessor and Microcontroller	3	0	0	3	3	10	40	50
BM 23.301	Biomaterials	3	0	0	3	3	10	40	50
BM 23.303	Medical Imaging Systems	3	0	0	3	3	10	40	50
BM 23.305	Biomedical Signal Processing	3	0	0	3	3	10	40	50
	Program Elective-1*	0	0	0	3	3	Based on MOOC Course Examination Grading		
EC 23.325	Microprocessor and Microcontroller Laboratory	0	0	2	1	2	50		50
BM 23.321	Biomaterials Laboratory	0	0	2	1	2	50		50
BM 23.325	Biomedical Signal Processing Laboratory	0	0	2	1	2	50		50
BM 23.331	Summer Internship – I**	0	0	0	2		100		
BM 23.333	Project I	0	0	4	2		50		50
GE 25.301	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
	Total	12	0	10	22				

Third Year -Spring Semester

Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)			
		L	T	P			CW	MTE	ETE
BM 23.302	Therapeutic and Surgical Equipment	3	0	0	3	3	10	40	50
BM 23.304	Medical Image Processing	3	0	0	3	3	10	40	50
BM 23.306	Biomechanics	3	0	0	3	3	10	40	50
BM 23.308	Physiological Control System	3	0	0	3	3	10	40	50
BM 23.310	Hospital Planning and Engineering	3	0	0	3	3	10	40	50
BM 23.312	Data Analysis in Healthcare	3	0	0	3	3	10	40	50
BM 23.322	Therapeutic and Surgical Equipment Laboratory	0	0	2	1	2	50		50
BM 23.324	Medical Image Processing Laboratory	0	0	2	1	2	50		50
BM 23.332	Colloquium	0	0	2	1		100		
BM 23.334	Project II	0	0	4	2		50		50
GE 25.302	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
	Total	15	0	10	23				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credit	22	21	21	26	22	23			135

*The course may be taken through MOOC. NPTEL/SWAYAM/Coursera will be the authorized platform for MOOC course. A minimum 8 week duration is required to earn 3 credits. After successful completion of this MOOC course, the student shall provide the successful completion status/certificate to the University (COE) through HOD/NPTEL/Coursera coordinator."

**Summer Internship-I must be carried out during the summer vacation, specifically between the end of the second year and the start of the third year.

*Proficiency (Non Credit, Non Graded) Shall be measured through level of participation in skill development programs i.e. sports, yoga, life skills, music, fine arts as decided by departmental committee.

Fourth Year Autumn Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)			
		L	T	P			CW	MTE	ETE
	University Elective-II	3	0	0	3	3	10	40	50
	Program Elective-2	3	0	0	3	3	10	40	50
	Program Elective-3	3	0	0	3	3	10	40	50
BM 23.421	Summer Internship –II*	0	0	0	2		100		
BM 23.423	Capstone Project-I	0	0	4	2		100		
	Total	9	0	4	13				

*Summer Internship-II must be during the summer vacation, specifically between the end of the third year and the start of the fourth year.

Fourth Year Spring Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)			
		L	T	P			CW	MTE	ETE
	Program elective-4	3	0	0	3	3	10	40	50
	Program elective-5	3	0	0	3	3	10	40	50
BM 23.422	Capstone Project-II	0	0	0	6		100		
	Total				12				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credit	22	21	21	26	22	23	13	12	160

Credit Distribution across all Components								
Semester	UC	UE	BS	ES	PC	PE	Proj/SIP	Total
First	02	X	13	06	X	X	01	22
Second	02	X	08	10	X	X	01	21
Third	X	X	04	04	12	X	01	21
Fourth	02	03	X	00	20	X	01	26
Fifth	X	X	X	X	15	03	04	22
Sixth	X	X	X	X	20	X	03	23
Seventh	X	03	X	X	X	06	04	13
Eighth	X	X	X	X	X	06	06	12
Total	06	06	25	20	67	15	21	160

UC	University Core	BS	Basic Science	PC	Program Core
UE	University Elective	ES	Engineering Science	PE	Program Elective
Proj/SIP	Project/Summer Internship				

List of Electives

Program Elective	Code	Courses
Program Elective -1		MOOC
Program Elective -2	BM 23.411	Telemedicine
	BM 23.413	Bioinformatics
	BM 23.415	Bio-fluid Mechanics
	BM 23.417	Nanotechnology in Medicine
Program Elective -3	BM 23.412	Tissue Engineering
	BM 23.414	Analytical Instrumentation and Techniques
	BM 23.416	Transport Phenomena in Biological Systems
	BM 23.418	Medical Radiation safety
Program Elective -4	BM 23.419	Rehabilitation Engineering
	BM 23.421	Artificial Organs and Implants
	BM 23.423	Data Mining And Machine Learning for Biomedicine
	BM 23.425	BioMEMS
Program Elective -5	BM 23.422	Fiber Optics and LASER in Medicine
	BM 23.424	Design & Development of Medical Devices
	BM 23.426	Bioethics, IPR and Regulatory affairs

B. Tech. in Biotechnology (4 Year Program) Effective from Academic Session 2025-29

Component	Credits	Courses	
1. University Core (3 Courses)	06	UC 23.101 Human Values & Professional Ethics UC 23.102 Pragmatic English Communication UC 25.202 Management and Entrepreneurship	
2. University Elective (2 Courses)	06	Mody University Elective I Mody University Elective II	
3. Basic Science (10 Courses)	27	MA 23.105 Basic Mathematics CY 23.101 Engineering Chemistry CY 23.111 Chemistry Laboratory MA 23.102 Applied Mathematics I PY 23.101 Engineering Physics	BM 24.208 Biochemistry BM 24.218 Biochemistry Laboratory PY 23.111 Physics Laboratory MA 23.201 Applied Mathematics II BM 23.101 Biology for Engineers
4. Engineering Science (9 Courses)	18	EC 25.101 Basics of Electronics Engineering EC 23.111 Electronics Laboratory ME 23.111 Computer Aided Engineering Drawing EE 25.101 Basics of Electrical Engineering	CS 23.111 Programming Laboratory I CS 23.101 Programming for Problem Solving I ME 23.111 Mechanical Workshop EE 23.111 Electrical Laboratory CY 23.102 Environmental Sciences
5. Program Core (33 Courses)	71	BM 24.205 Cell Biology BM 24.207 Microbiology BM 24.209 Genetics BM 24.211 Bioprocess Technology BM 24.213 Bioprocess Technology Laboratory BM 24.215 Cell Biology Laboratory BM 24.217 Microbiology Laboratory BM 24.219 Genetics Laboratory BM 24.301 Bioinformatics BM 24.303 Genetic Engineering BM 24.305 Drug Design and Development BM 24.307 Biomedical Engineering Fundamentals BM 23.301 Biomaterials BM 24.321 Bioinformatics Laboratory BM 24.323 Genetic Engineering Laboratory BM 24.325 Biomedical Engineering Laboratory BM 23.321 Biomaterials Laboratory BM 24.210 Molecular Biology BM 24.212 Analytical Tools for Biotechnologist	BM 24.214 Immunology and Immunotechnology BM 24.216 Fundamentals of Biological Engineering BM 24.220 Molecular Biology Laboratory BM 24.222 Bioanalytical Tools Laboratory BM 24.224 Immunology Laboratory BM 24.302 Enzymology BM 24.306 Environmental Biotechnology BM 24.308 Plant Biotechnology BM 23.312 Data Analysis in Health Care BM 24.314 Bioseparation Techniques BM 24.316 Bioethics, IPR and Regulatory Affairs BM 24.318 Environmental Biotechnology Laboratory BM 24.322 Enzymology Laboratory BM 24.320 Plant Biotechnology Laboratory
6. Program Elective / MOOCs (5 Courses)	15	MOOC – 01 Program Elective – 04	
7. Project / Summer Internship / Colloquium (10 Courses)	20	Summer Internship – 02 Project – 02 Capstone Project – 02 PBL – 04	
8. Proficiency (Non-Credit / Non-Graded) (4 Courses)	00	SEFS – 04	
Total	163	76 Courses	

Course Structure

B. Tech. in Biotechnology (4 Year Program) Effective from Academic Session 2025-29

First Year - Autumn Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.101	Human Values & Professional Ethics	2	0	0	2	3	10	40	50
MA 23.105	Basic Mathematics	3	1	0	4	3	10	40	50
CY 23.101	Engineering Chemistry	3	0	0	3	3	10	40	50
BM 23.101	Biology for Engineers	3	0	0	3	3	10	40	50
EC 25.101	Basics of Electronics Engineering	3	0	0	3	3	10	40	50
ME 23.111	Computer Aided Engineering Drawing	0	0	4	2	2	50		50
CY 23.111	Chemistry Laboratory	0	0	2	1	2	50		50
EC 23.111	Electronics Laboratory	0	0	2	1	2	50		50
CY 23.102	Environmental Sciences	2	0	0	2	3	10	40	50
PB 25.101	Project Based Learning I	0	0	2	1	0	50		50
SF 101	Personal Grooming and Fine Dining (Non-Credit)	0	0	2	1	1	50		50
	Total	16	1	12	22				

First Year - Spring Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.102	Pragmatic English Communication	2	0	0	2	3	10	40	50
MA 23.106	Applied Mathematics-I	3	1	0	4	3	10	40	50
PY 23.101	Engineering Physics	3	0	0	3	3	10	40	50
EE 25.101	Basics of Electrical Engineering	3	0	0	3	3	10	40	50
CS 23.101	Programming for Problem Solving I	3	0	0	3	3	10	40	50
CS 23.111	Programming Laboratory	0	0	4	2	2	50		50
PY 23.111	Physics Laboratory	0	0	2	1	2	50		50
EE 23.111	Electrical Laboratory	0	0	2	1	2	50		50
ME 23.112	Mechanical Workshop	0	0	2	1	2	50		50
PB 25.102	Project Based Learning II	0	0	2	1	0	50		50
SF 102	Social Grooming, Home & Décor and Business Communication (Non-Credit)	0	0	2	1	1	50		50
	Total	14	1	14	21				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21							43

Course Structure

Department of Biomedical Engineering, SET, Mody University of Science and Technology

B. Tech. in Biotechnology (4 Year Program) Effective from Academic Session 2025-29

Second Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
MA 23.205	Applied Mathematics-II	3	1	0	4	3	10	40	50
BM 24.205	Cell Biology	3	0	0	3	3	10	40	50
BM 24.207	Microbiology	3	0	0	3	3	10	40	50
BM 24.209	Genetics	3	0	0	3	3	10	40	50
BM 24.211	Bioprocess Technology	3	0	0	3	3	10	40	50
BM 24.213	Bioprocess Technology Laboratory	0	0	2	1	2	50		50
BM 24.215	Cell Biology Laboratory	0	0	2	1	2	50		50
BM 24.217	Microbiology Laboratory	0	0	2	1	2	50		50
BM 24.219	Genetics Laboratory	0	0	2	1	2	50		50
PB 25.201	Problem Based Learning III	0	0	2	1	0	50		50
SF 23.201	Personal Grooming, Fine Dining and Home & Safety (Non Credit)	0	0	2	1	2	50		50
		15	1	12	21				

Second Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
UC 25.202	Management and Entrepreneurship	2	0	0	2	3	10	40	50
	University Elective-I	3	0	0	3	3	10	40	50
BM 24.208	Biochemistry	3	0	0	3	3	10	40	50
BM 24.210	Molecular Biology	3	0	0	3	3	10	40	50
BM 24.212	Analytical Tools for Biotechnologist	3	0	0	3	3	10	40	50
BM 24.214	Immunology and Immunotechnology	3	0	0	3	3	10	40	50
BM 24.216	Fundamentals of Biological Engineering	3	0	0	3	3	10	40	50
BM 24.218	Biochemistry Laboratory	0	0	2	1	2	50		50
BM 24.220	Molecular Biology Laboratory	0	0	2	1	2	50		50
BM 24.222	Bioanalytical Tools Laboratory	0	0	2	1	2	50		50
BM 24.224	Immunology Laboratory	0	0	2	1	2	50		50
PB 25.202	Problem Based Learning IV	0	0	2	1		50		50
SF 23.202	Social Grooming and Professional Skills (Non Credit)	0	0	2	1	2	50		50
		20	0	12	25				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25					89

Course Structure

B. Tech. in Biotechnology (4 Year Program) Effective from Academic Session 2025-29

Third Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
BM 24. 301	Bioinformatics	3	0	0	3	3	10	40	50
BM 24. 303	Genetic Engineering	3	0	0	3	3	10	40	50
BM 24. 305	Drug Design and Development	3	0	0	3	3	10	40	50
BM 24. 307	Biomedical Engineering Fundamentals	3	0	0	3	3	10	40	50
BM 23. 301	Biomaterials	3	0	0	3	3	10	40	50
	Program Elective-I	0	0	0	3	3	Based on MOOC course examination grading*		
BM 24. 321	Bioinformatics Laboratory	0	0	2	1	2	20	40	40
BM 24. 323	Genetic Engineering Laboratory	0	0	2	1	2	20	40	40
BM 24. 325	Biomedical Engineering Laboratory	0	0	2	1	2	20	40	40
BM 23. 321	Biomaterials Laboratory	0	0	2	1	2	20	40	40
BM 23. 331	Summer Internship-I**	0	0	0	2		100		
BM 23. 333	Project-I	0	0	4	2		50		50
GE 25.301	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
					26				

Third Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
BM 24. 302	Enzymology	3	0	0	3	3	10	40	50
BM 24. 306	Environmental Biotechnology	3	0	0	3	3	10	40	50
BM 24. 308	Plant Biotechnology	3	0	0	3	3	10	40	50
BM 23. 312	Data Analysis in Health Care	3	0	0	3	3	10	40	50
BM 24. 314	Bioseparation Techniques	3	0	0	3	3	10	40	50
BM 24. 316	Bioethics IPR and Regulatory affairs	3	0	0	3	3	10	40	50
BM 24. 318	Environmental Biotechnology Laboratory	0	0	2	1	2	20	40	40
BM 24. 320	Plant Biotechnology Laboratory	0	0	2	1	2	20	40	40
BM 24. 322	Enzymology Laboratory	0	0	2	1	2	20	40	40
BM 23.334	Project-II	0	0	4	2		50		50
GE 25.302	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
					23				

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*Proficiency (Non Credit, Non Graded) Shall be measured through level of participation in skill development programs i.e. sports, yoga, life skills, music, fine arts as decided by departmental committee.

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25	26	23			138

Course Structure

B. Tech. in Biotechnology (4 Year Program) Effective from Academic Session 2024-25

Fourth Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
	University Elective-II	3	0	0	3	3	10	40	50
	Programme Elective-II	3	0	0	3	3	10	40	50
	Programme Elective-III	3	0	0	3	3	10	40	50
BM 23.421	Summer Internship-II	0	0	0	2		100		
BM 23.423	Capstone Project-I	0	0	0	2		100		
		9	0	0	13				

Fourth Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
	Programme Elective-IV	3	0	0	3	3	10	40	50
	Programme Elective-V	3	0	0	3	3	10	40	50
BM 23.422	Capstone Project-II	0	0	0	6		100		
		9	0	0	12				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	21	21	21	25	26	23	13	12	163

	Credit Distribution across all components							
Semester	UC	UE	BS	ES	PC	PE	Proj/ SIP	Total
First	02	00	11	08	00	00	01	22
Second	02	00	08	10	00	00	01	21
Third	00	00	04	00	16	00	01	21
Fourth	02	03	04	00	15	00	01	25
Fifth	00	00	00	00	19	03	04	26
Sixth	00	00	00	00	21	00	02	23
Seventh	00	03	00	00	00	06	04	13
Eight	00	00	00	00	00	06	06	12
Total	06	06	27	18	75	15	20	163

UC – University Core
UE – University Elective
BS – Basic Science
ES- Engineering Science
PC- Program Core
PE- Program Elective
Proj/SIP – Project SIP

List of Electives
B. Tech. in Biotechnology

Program Elective	Course Code	Course Name
Program Elective -1		MOOC
Program Elective -2	BM 23.304	Medical Image Processing
	BM 24. 401	Metabolic Engineering
	BM 23. 417	Nanotechnology in Medicine
	BM 23. 414	Analytical Instrumentation and Techniques
	BM 24. 403	Medical Biotechnology
Program Elective -3	BM 24. 405	Animal Biotechnology
	BM 23. 412	Tissue Engineering
	BM 23. 421	Artificial Organs and Implants
	BM 24. 407	Industrial Biotechnology
	BM 24. 409	Stem Cell Technology
Program Elective -4	BM 23. 416	Transport Phenomena in Biological Systems
	BM 24. 402	Food Technology
	BM 24. 324	Genomics and Proteomics
	BM 24. 404	Cancer Biology
	BM 23. 425	BioMEMS
Program Elective -5	BM23. 418	Medical Radiation safety
	BM 24. 423	Data Mining And Machine Learning for Biomedicine
	BM 24. 408	3D Printing & Design
	BM 24. 410	Internet of Things
	BM 24. 412	Protein Engineering

Component	Credits	Courses	
1. University Core (3 Courses)	06	UC 23.101 Human Values & Professional Ethics UC 23.102 Pragmatic English Communication UC 25.202 Management and Entrepreneurship	
2. University Elective (2 Courses)	06	Mody University Elective I Mody University Elective II	
3. Basic Science (10 Courses)	27	MA 23.105 Basic Mathematics CY 23.101 Engineering Chemistry CY 23.111 Chemistry Laboratory MA 23.102 Applied Mathematics I PY 23.101 Engineering Physics	BM 24.208 Biochemistry BM 24.218 Biochemistry Laboratory PY 23.111 Physics Laboratory MA 23.201 Applied Mathematics-II BM 23.101 Biology for Engineers
4. Engineering Science (09 Courses)	18	EC 25.101 Basics of Electronics Engineering EC 23.111 Electronics Laboratory ME 23.111 Computer Aided Engineering Drawing EE 25.101 Basics of Electrical Engineering	CS 23.101 Programming for Problem Solving I CS 23.111 Programming Laboratory I ME 23.111 Mechanical Workshop EE 23.111 Electrical Laboratory CY 23.102 Environmental Sciences
5. Program Core (33 Courses)	71	BM 24.205 Cell Biology BM 24.207 Microbiology BM 24.209 Genetics BM 24.211 Bioprocess Technology BM 24.213 Bioprocess Technology Laboratory BM 24.215 Cell Biology Laboratory BM 24.217 Microbiology Laboratory BM 24.219 Genetics Laboratory BM 24. 301 Bioinformatics BM 24. 303 Genetic Engineering BM 24. 305 Drug Design and Development BM 24. 307 Biomedical Engineering Fundamentals BM 23. 301 Biomaterials BM 24. 321 Bioinformatics Laboratory BM 24. 323 Genetic Engineering Laboratory BM 24. 325 Biomedical Engineering Laboratory BM 23. 321 Biomaterials Laboratory	BM 24.210 Molecular Biology BM 24.212 Analytical Tools for Biotechnologist BM 24.214 Immunology and Immuno- technology BM 24.216 Fundamentals of Biological Engineering BM 24.220 Molecular Biology Laboratory BM 24.222 Bioanalytical Tools Laboratory BM 24.224 Immunology Laboratory BM 24. 302 Enzymology BM 24. 324 Genomics and Proteomics BM 24. 308 Plant Biotechnology BM 23. 312 Data Analysis in Health Care BM 24. 314 Bioseparation Techniques BM 24. 316 Bioethics IPR and Regulatory affairs BM 24. 326 Genomics and Proteomics Laboratory BM 24. 322 Enzymology Laboratory BM 24. 320 Plant Biotechnology Laboratory
6. Program Elective / MOOCs (5 Courses)	15	MOOC – 01 Program Elective – 04	
7. Project / Summer Internship/ Colloquium (10 Courses)	20	Summer Internship – 02	Project – 02 Capstone Project – 02 PBL - 04
8. Proficiency (Non- Credit / Non-Graded) (4 Courses)	00	SEFS – 04	
Total	163	76 Courses	

Course Structure
B. Tech. in Biotechnology (Specialization in Genetic Engineering) (4 Year Program)
Effective from Academic Session 2025-29

First Year - Autumn Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.101	Human Values & Professional Ethics	2	0	0	2	3	10	40	50
MA 23.105	Basic Mathematics	3	1	0	4	3	10	40	50
CY 23.101	Engineering Chemistry	3	0	0	3	3	10	40	50
BM 23.101	Biology for Engineers	3	0	0	3	3	10	40	50
EC 25.101	Basics of Electronics Engineering	3	0	0	3	3	10	40	50
ME 23.111	Computer Aided Engineering Drawing	0	0	4	2	2	50		50
CY 23.111	Chemistry Laboratory	0	0	2	1	2	50		50
EC 23.111	Electronics Laboratory	0	0	2	1	2	50		50
CY 23.102	Environmental Sciences	2	0	0	2	3	10	40	50
PB 25.101	Project Based Learning I	0	0	2	1	0	50		50
SF 101	Personal Grooming and Fine Dining (Non-Credit)	0	0	2	1	1	50		50
	Total	16	1	12	22				

First Year - Spring Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.102	Pragmatic English Communication	2	0	0	2	3	10	40	50
MA 23.106	Applied Mathematics-I	3	1	0	4	3	10	40	50
PY 23.101	Engineering Physics	3	0	0	3	3	10	40	50
EE 25.101	Basics of Electrical Engineering	3	0	0	3	3	10	40	50
CS 23.101	Programming for Problem Solving I	3	0	0	3	3	10	40	50
CS 23.111	Programming Laboratory	0	0	4	2	2	50		50
PY 23.111	Physics Laboratory	0	0	2	1	2	50		50
EE 23.111	Electrical Laboratory	0	0	2	1	2	50		50
ME 23.112	Mechanical Workshop	0	0	2	1	2	50		50
PB 25.102	Project Based Learning II	0	0	2	1	0	50		50
SF 102	Social Grooming, Home & Décor and Business Communication (Non-Credit)	0	0	2	1	1	50		50
	Total	14	1	14	21				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credit	22	21							43

Course Structure

B. Tech. in Biotechnology (Specialization in Genetic Engineering) (4 Year Program)

Effective from Academic Session 2025-29

Second Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
MA 23.205	Applied Mathematics-II	3	1	0	4	3	10	40	50
BM 24.205	Cell Biology	3	0	0	3	3	10	40	50
BM 24.207	Microbiology	3	0	0	3	3	10	40	50
BM 24.209	Genetics	3	0	0	3	3	10	40	50
BM 24.211	Bioprocess Technology	3	0	0	3	3	10	40	50
BM 24.213	Bioprocess Technology Laboratory	0	0	2	1	2	50		50
BM 24.215	Cell Biology Laboratory	0	0	2	1	2	50		50
BM 24.217	Microbiology Laboratory	0	0	2	1	2	50		50
BM 24.219	Genetics Laboratory	0	0	2	1	2	50		50
PB 25.201	Problem Base Learning-III	0	0	2	1	0	50		50
SF 23.201	Personal Grooming, Fine Dining and Home & Safety (Non Credit)	0	0	2	1	2	50		50
		15	1	12	21				

Second Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
UC 23.202	Management and Entrepreneurship	2	0	0	2	3	10	40	50
	University Elective-I	3	0	0	3	3	10	40	50
BM 24.208	Biochemistry	3	0	0	3	3	10	40	50
BM 24.210	Molecular Biology	3	0	0	3	3	10	40	50
BM 24.212	Analytical Tools for Biotechnologist	3	0	0	3	3	10	40	50
BM 24.214	Immunology and Immunotechnology	3	0	0	3	3	10	40	50
BM 24.216	Fundamentals of Biological Engineering	3	0	0	3	3	10	40	50
BM 24.218	Biochemistry Laboratory	0	0	2	1	2	50		50
BM 24.220	Molecular Biology Laboratory	0	0	2	1	2	50		50
BM 24.222	Bioanalytical Tools Laboratory	0	0	2	1	2	50		50
BM 24.224	Immunology Laboratory	0	0	2	1	2	50		50
PB 25.202	Problem Base Learning-IV	0	0	2	1	0	50		50
SF 23.202	Social Grooming and Professional Skills (Non Credit)	0	0	2	1	2	50		50
		20	0	12	25				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25					89

Course Structure

B. Tech. in Biotechnology (Specialization in Genetic Engineering) (4 Year Program)

Effective from Academic Session 2025-29

Third Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
BM 24. 301	Bioinformatics	3	0	0	3	3	10	40	50
BM 24. 303	Genetic Engineering	3	0	0	3	3	10	40	50
BM 24. 305	Drug Design and Development	3	0	0	3	3	10	40	50
BM 24. 307	Biomedical Engineering Fundamentals	3	0	0	3	3	10	40	50
BM 23. 301	Biomaterials	3	0	0	3	3	10	40	50
	Program Elective-I	0	0	0	3	3	Based on MOOC course examination grading*		
BM 24. 321	Bioinformatics Laboratory	0	0	2	1	2	50		50
BM 24. 323	Genetic Engineering Laboratory	0	0	2	1	2	50		50
BM 24. 325	Biomedical Engineering Laboratory	0	0	2	1	2	50		50
BM 23. 321	Biomaterials Laboratory	0	0	2	1	2	50		50
BM 23. 331	Summer Internship-I**	0	0	0	2		100		
BM 23. 333	Project-I	0	0	4	2		50		50
GE 25.301	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
					26				

Third Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
BM 24. 302	Enzymology	3	0	0	3	3	10	40	50
BM 24. 324	Genomics and Proteomics	3	0	0	3	3	10	40	50
BM 24. 308	Plant Biotechnology	3	0	0	3	3	10	40	50
BM 23. 312	Data Analysis in Health Care	3	0	0	3	3	10	40	50
BM 24. 314	Bioseparation Techniques	3	0	0	3	3	10	40	50
BM 24. 316	Bioethics IPR and Regulatory affairs	3	0	0	3	3	10	40	50
BM 24. 326	Genomics and Proteomics Laboratory	0	0	2	1	2	50		50
BM 24. 320	Plant Biotechnology Laboratory	0	0	2	1	2	50		50
BM 24. 322	Enzymology Laboratory	0	0	2	1	2	50		50
BM 23.334	Project-II	0	0	4	2		50		50
GE 25.302	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
					23				

*The course may be taken through MOOC. NPTEL/SWAYAM/Coursera will be the authorized platform for MOOC course. A minimum 8 week duration is required to earn 3 credits. After successful completion of this MOOC course, the student shall provide the successful completion status/certificate to the University (COE) through HOD/NPTEL/Coursera coordinator."

**Summer Internship-I must be carried out during the summer vacation, specifically between the end of the second year and the start of the third year.

*Proficiency (Non Credit, Non Graded) Shall be measured through level of participation in skill development programs i.e. sports, yoga, life skills, music, fine arts as decided by departmental committee.

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25	26	23			138

Course Structure

B. Tech. in Biotechnology (Specialization in Genetic Engineering)
(4 Year Program) Effective from Academic Session 2025-29

Fourth Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
	University Elective-II	3	0	0	3	3	10	40	50
	Programme Elective-II	3	0	0	3	3	10	40	50
	Programme Elective-III	3	0	0	3	3	10	40	50
BM 23.421	Summer Internship-II	0	0	0	2		100		
BM 23.423	Capstone Project-I	0	0	0	2		100		
		9	0	0	13				

Fourth Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
	Programme Elective-IV	3	0	0	3	3	10	40	50
	Programme Elective-V	3	0	0	3	3	10	40	50
BM 23.422	Capstone Project-II	0	0	0	6		100		
		9	0	0	12				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25	26	23	13	12	163

	Credit Distribution across all components							
Semester	UC	UE	BS	ES	PC	PE	Proj/ SIP	Total
First	02	00	11	08	00	00	01	22
Second	02	00	08	10	00	00	01	21
Third	00	00	04	00	16	00	01	21
Fourth	02	03	04	00	15	00	01	25
Fifth	00	00	00	00	19	03	04	26
Sixth	00	00	00	00	21	00	02	23
Seventh	00	03	00	00	00	06	04	13
Eight	00	00	00	00	00	06	06	12
Total	06	06	27	18	75	15	20	163

UC – University Core
UE – University Elective
BS – Basic Science
ES- Engineering Science
PC- Program Core
PE- Program Elective
Proj/SIP – Project SIP

List of Electives
B. Tech. in Biotechnology (Specialization in Genetic Engineering)

Program Elective	Course Code	Course Name
Program Elective -1		MOOC
Program Elective -2	BM 23.304	Medical Image Processing
	BM 24. 401	Metabolic Engineering
	BM 23. 417	Nanotechnology in Medicine
	BM 23. 414	Analytical Instrumentation and Techniques
	BM 24. 403	Medical Biotechnology
Program Elective -3	BM 24. 405	Animal Biotechnology
	BM 23. 412	Tissue Engineering
	BM 23. 421	Artificial Organs and Implants
	BM 24. 407	Industrial Biotechnology
	BM 24. 409	Stem Cell Technology
Program Elective -4	BM 23. 416	Transport Phenomena in Biological Systems
	BM 24. 402	Food Technology
	BM 24. 406	Clinical Trails and Healthcare Policies in Biotechnology
	BM 24. 404	Cancer Biology
	BM 23. 425	BioMEMS
	BM 24.306	Environmental Biotechnology
Program Elective -5	BM23. 418	Medical Radiation safety
	BM 24. 423	Data Mining And Machine Learning for Biomedicine
	BM 24. 408	3D Printing & Design
	BM 24. 410	Internet of Things
	BM 24. 412	Protein Engineering

Component	Credits	Courses	
1. University Core (3 Courses)	06	UC 23.101 Human Values & Professional Ethics UC 23.102 Pragmatic English Communication UC 25.202 Management and Entrepreneurship	
2. University Elective (2 Courses)	06	Mody University Elective I Mody University Elective II	
3. Basic Science (10 Courses)	27	MA 23.105 Basic Mathematics CY 23.101 Engineering Chemistry CY 23.111 Chemistry Laboratory MA 23.102 Applied Mathematics I PY 23.101 Engineering Physics	BM 24.208 Biochemistry BM 24.218 Biochemistry Laboratory PY 23.111 Physics Laboratory MA 23.201 Applied Mathematics-II BM 23.101 Biology for Engineers
4. Engineering Science (09 Courses)	18	EC 25.101 Basics of Electronics Engineering EC 23.111 Electronics Laboratory ME 23.111 Computer Aided Engineering Drawing EE 25.101 Basics of Electrical Engineering	CS 23.101 Programming for Problem Solving I CS 23.111 Programming Laboratory I ME 23.111 Mechanical Workshop EE 23.111 Electrical Laboratory CY 23.102 Environmental Sciences
5. Program Core (33 Courses)	71	BM 24.205 Cell Biology BM 24.207 Microbiology BM 24.209 Genetics BM 24.211 Bioprocess Technology BM 24.213 Bioprocess Technology Laboratory BM 24.215 Cell Biology Laboratory BM 24.217 Microbiology Laboratory BM 24.219 Genetics Laboratory BM 24. 301 Bioinformatics BM 24. 303 Genetic Engineering BM 24. 305 Drug Design and Development BM 24. 307 Biomedical Engineering Fundamentals BM 23. 301 Biomaterials BM 24. 321 Bioinformatics Laboratory BM 24. 323 Genetic Engineering Laboratory BM 24. 325 Biomedical Engineering Laboratory BM 23. 321 Biomaterials Laboratory	BM 24.210 Molecular Biology BM 24.212 Analytical Tools for Biotechnologist BM 24.214 Immunology and Immuno- technology BM 24.216 Fundamentals of Biological Engineering BM 24.220 Molecular Biology Laboratory BM 24.222 Bioanalytical Tools Laboratory BM 24.224 Immunology Laboratory BM 24. 302 Enzymology BM 23.412 Tissue Engineering BM 24. 308 Plant Biotechnology BM 23. 312 Data Analysis in Health Care BM 24. 314 Bioseparation Techniques BM 24. 316 Bioethics IPR and Regulatory affairs BM 23.330 Tissue Engineering Laboratory BM 24. 322 Enzymology Laboratory BM 24. 320 Plant Biotechnology Laboratory
6. Program Elective / MOOCs (5 Courses)	15	MOOC – 01 Program Elective – 04	
7. Project / Summer Internship/ Colloquium (10 Courses)	20	Summer Internship – 02	Project – 02 Capstone Project – 02 PBL - 04
8. Proficiency (Non- Credit / Non-Graded) (4 Courses)	00	SEFS – 04	
Total	163	76 Courses	

Course Structure

B. Tech. in Biotechnology (Specialization in Regenerative Medicine) (4 Year Program)
Effective from Academic Session 2025-29

First Year - Autumn Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.101	Human Values & Professional Ethics	2	0	0	2	3	10	40	50
MA 23.105	Basic Mathematics	3	1	0	4	3	10	40	50
CY 23.101	Engineering Chemistry	3	0	0	3	3	10	40	50
BM 23.101	Biology for Engineers	3	0	0	3	3	10	40	50
EC 25.101	Basics of Electronics Engineering	3	0	0	3	3	10	40	50
ME 23.111	Computer Aided Engineering Drawing	0	0	4	2	2	50		50
CY 23.111	Chemistry Laboratory	0	0	2	1	2	50		50
EC 23.111	Electronics Laboratory	0	0	2	1	2	50		50
CY 23.102	Environmental Sciences	2	0	0	2	3	10	40	50
PB 25.101	Project Based Learning I	0	0	2	1	0	50		50
SF 101	Personal Grooming and Fine Dining (Non-Credit)	0	0	2	1	1	50		50
	Total	16	1	12	22				

First Year - Spring Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.102	Pragmatic English Communication	2	0	0	2	3	10	40	50
MA 23.106	Applied Mathematics-I	3	1	0	4	3	10	40	50
PY 23.101	Engineering Physics	3	0	0	3	3	10	40	50
EE 25.101	Basics of Electrical Engineering	3	0	0	3	3	10	40	50
CS 23.101	Programming for Problem Solving I	3	0	0	3	3	10	40	50
CS 23.111	Programming Laboratory	0	0	4	2	2	50		50
PY 23.111	Physics Laboratory	0	0	2	1	2	50		50
EE 23.111	Electrical Laboratory	0	0	2	1	2	50		50
ME 23.112	Mechanical Workshop	0	0	2	1	2	50		50
PB 25.102	Project Based Learning II	0	0	2	1	0	50		50
SF 102	Social Grooming, Home & Décor and Business Communication (Non-Credit)	0	0	2	1	1	50		50
	Total	14	1	14	21				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credit	22	21							43

Course Structure

B. Tech. in Biotechnology (Specialization in Regenerative Medicine) (4 Year Program)
 Effective from Academic Session 2025-29

Second Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
MA 23.205	Applied Mathematics-II	3	1	0	4	3	10	40	50
BM 24.205	Cell Biology	3	0	0	3	3	10	40	50
BM 24.207	Microbiology	3	0	0	3	3	10	40	50
BM 24.209	Genetics	3	0	0	3	3	10	40	50
BM 24.211	Bioprocess Technology	3	0	0	3	3	10	40	50
BM 24.213	Bioprocess Technology Laboratory	0	0	2	1	2	50		50
BM 24.215	Cell Biology Laboratory	0	0	2	1	2	50		50
BM 24.217	Microbiology Laboratory	0	0	2	1	2	50		50
BM 24.219	Genetics Laboratory	0	0	2	1	2	50		50
PB 25.201	Problem Based Learning-III	0	0	2	1	0	50		50
SF 23.201	Personal Grooming, Fine Dining and Home & Safety (Non Credit)	0	0	2	1	2	50		50
		15	1	12	21				

Second Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
UC 25.202	Management and Entrepreneurship	2	0	0	2	3	10	40	50
	University Elective-I	3	0	0	3	3	10	40	50
BM 24.208	Biochemistry	3	0	0	3	3	10	40	50
BM 24.210	Molecular Biology	3	0	0	3	3	10	40	50
BM 24.212	Analytical Tools for Biotechnologist	3	0	0	3	3	10	40	50
BM 24.214	Immunology and Immunotechnology	3	0	0	3	3	10	40	50
BM 24.216	Fundamentals of Biological Engineering	3	0	0	3	3	10	40	50
BM 24.218	Biochemistry Laboratory	0	0	2	1	2	50		50
BM 24.220	Molecular Biology Laboratory	0	0	2	1	2	50		50
BM 24.222	Bioanalytical Tools Laboratory	0	0	2	1	2	50		50
BM 24.224	Immunology Laboratory	0	0	2	1	2	50		50
PB 25.202	Problem Based Learning-IV	0	0	2	1	0	50		50
SF 23.202	Social Grooming and Professional Skills (Non Credit)	0	0	2	1	2	50		50
		20	0	12	25				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25					89

Course Structure

B. Tech. in Biotechnology (Specialization in Regenerative Medicine) (4 Year Program)

Effective from Academic Session 2025-29

Third Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
BM 24. 301	Bioinformatics	3	0	0	3	3	10	40	50
BM 24. 303	Genetic Engineering	3	0	0	3	3	10	40	50
BM 24. 305	Drug Design and Development	3	0	0	3	3	10	40	50
BM 24. 307	Biomedical Engineering Fundamentals	3	0	0	3	3	10	40	50
BM 23. 301	Biomaterials	3	0	0	3	3	10	40	50
	Program Elective-I	0	0	0	3	3	Based on MOOC course examination grading*		
BM 24. 321	Bioinformatics Laboratory	0	0	2	1	2	50		50
BM 24. 323	Genetic Engineering Laboratory	0	0	2	1	2	50		50
BM 24. 325	Biomedical Engineering Laboratory	0	0	2	1	2	50		50
BM 23. 321	Biomaterials Laboratory	0	0	2	1	2	50		50
BM 23. 331	Summer Internship-I**	0	0	0	2		100		
BM 23. 333	Project-I	0	0	4	2		50		50
GE 25.301	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
					26				

Third Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
BM 24. 302	Enzymology	3	0	0	3	3	10	40	50
BM 23.412	Tissue Engineering	3	0	0	3	3	10	40	50
BM 24. 308	Plant Biotechnology	3	0	0	3	3	10	40	50
BM 23. 312	Data Analysis in Health Care	3	0	0	3	3	10	40	50
BM 24. 314	Bioseperation Techniques	3	0	0	3	3	10	40	50
BM 24. 316	Bioethics IPR and Regulatory affairs	3	0	0	3	3	10	40	50
BM 24. 330	Tissue Engineering Laboratory	0	0	2	1	2	50		50
BM 24. 320	Plant Biotechnology Laboratory	0	0	2	1	2	50		50
BM 24. 322	Enzymology Laboratory	0	0	2	1	2	50		50
BM 23.334	Project-II	0	0	4	2		50		50
GE 25.302	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
					23				

*The course may be taken through MOOC. NPTEL/SWAYAM/Coursera will be the authorized platform for MOOC course. A minimum 8 week duration is required to earn 3 credits. After successful completion of this MOOC course, the student shall provide the successful completion status/certificate to the University (COE) through HOD/NPTEL/Coursera coordinator."

**Summer Internship-I must be carried out during the summer vacation, specifically between the end of the second year and the start of the third year.

*Proficiency (Non Credit, Non Graded) Shall be measured through level of participation in skill development programs i.e. sports, yoga, life skills, music, fine arts as decided by departmental committee.

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25	26	23			138

Course Structure

B. Tech. in Biotechnology (Specialization in Regenerative Medicine) (4 Year Program)

Effective from Academic Session 2025-29

Fourth Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
	University Elective-II	3	0	0	3	3	10	40	50
	Programme Elective-II	3	0	0	3	3	10	40	50
	Programme Elective-III	3	0	0	3	3	10	40	50
BM 23.421	Summer Internship-II	0	0	0	2		100		
BM 23.423	Capstone Project-I	0	0	0	2		100		
		9	0	0	13				

Fourth Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
	Programme Elective-IV	3	0	0	3	3	10	40	50
	Programme Elective-V	3	0	0	3	3	10	40	50
BM 23.422	Capstone Project-II	0	0	0	6		100		
		9	0	0	12				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	22	23	26	23	13	12	163

	Credit Distribution across all components							
Semester	UC	UE	BS	ES	PC	PE	Proj/ SIP	Total
First	02	00	11	08	00	00	01	22
Second	02	00	08	10	00	00	01	21
Third	00	00	04	00	16	00	01	21
Fourth	02	03	04	00	15	00	01	25
Fifth	00	00	00	00	19	03	04	26
Sixth	00	00	00	00	21	00	02	23
Seventh	00	03	00	00	00	06	04	13
Eight	00	00	00	00	00	06	06	12
Total	06	06	27	18	75	15	20	163

UC – University Core
UE – University Elective
BS – Basic Science
ES- Engineering Science
PC- Program Core
PE- Program Elective
Proj/SIP – Project SIP

List of Electives

B. Tech. in Biotechnology (Specialization in Regenerative Medicine)

Program Elective	Course Code	Course Name
Program Elective -1		MOOC
Program Elective -2	BM 23.304	Medical Image Processing
	BM 24. 401	Metabolic Engineering
	BM 23. 417	Nanotechnology in Medicine
	BM 23. 414	Analytical Instrumentation and Techniques
	BM 24. 403	Medical Biotechnology
Program Elective -3	BM 24. 405	Animal Biotechnology
	BM 23. 421	Artificial Organs and Implants
	BM 24. 407	Industrial Biotechnology
	BM 24. 409	Stem Cell Technology
Program Elective -4	BM 23. 416	Transport Phenomena in Biological Systems
	BM 24. 402	Food Technology
	BM 24. 324	Genomics and Proteomics
	BM 24. 404	Cancer Biology
	BM 23. 425	BioMEMS
	BM 24.306	Environmental Biotechnology
Program Elective -5	BM23. 418	Medical Radiation safety
	BM 24. 423	Data Mining And Machine Learning for Biomedicine
	BM 24. 408	3D Printing & Design
	BM 24. 410	Internet of Things
	BM 24. 412	Protein Engineering

Component	Credits	Courses	
1. University Core (3 Courses)	06	UC 23.101 Human Values & Professional Ethics UC 23.102 Pragmatic English Communication UC 25.202 Management and Entrepreneurship	
2. University Elective (2 Courses)	06	Mody University Elective I Mody University Elective II	
3. Basic Science (10 Courses)	27	MA 23.105 Basic Mathematics CY 23.101 Engineering Chemistry CY 23.111 Chemistry Laboratory MA 23.102 Applied Mathematics I PY 23.101 Engineering Physics	BM 24.208 Biochemistry BM 24.218 Biochemistry Laboratory PY 23.111 Physics Laboratory MA 23.201 Applied Mathematics-II BM 23.101 Biology for Engineers
4. Engineering Science (09 Courses)	18	EC 25.101 Basics of Electronics Engineering EC 23.111 Electronics Laboratory ME 23.111 Computer Aided Engineering Drawing EE 25.101 Basics of Electrical Engineering	CS 23.101 Programming for Problem Solving I CS 23.111 Programming Laboratory I ME 23.111 Mechanical Workshop EE 23.111 Electrical Laboratory CY 23.102 Environmental Sciences
5. Program Core (33 Courses)	71	BM 24.205 Cell Biology BM 24.207 Microbiology BM 24.209 Genetics BM 24.211 Bioprocess Technology BM 24.213 Bioprocess Technology Laboratory BM 24.215 Cell Biology Laboratory BM 24.217 Microbiology Laboratory BM 24.219 Genetics Laboratory BM 24.301 Bioinformatics BM 24.303 Genetic Engineering BM 24.305 Drug Design and Development BM 24.307 Biomedical Engineering Fundamentals BM 23.301 Biomaterials BM 24.321 Bioinformatics Laboratory BM 24.323 Genetic Engineering Laboratory BM 24.325 Biomedical Engineering Laboratory BM 23.321 Biomaterials Laboratory	BM 24.210 Molecular Biology BM 24.212 Analytical Tools for Biotechnologist BM 24.214 Immunology and Immuno- technology BM 24.216 Fundamentals of Biological Engineering BM 24.220 Molecular Biology Laboratory BM 24.222 Bioanalytical Tools Laboratory BM 24.224 Immunology Laboratory BM 24.302 Enzymology BM 23.306 Biomechanics BM 24.308 Plant Biotechnology BM 23.312 Data Analysis in Health Care BM 24.314 Bioseparation Techniques BM 24.316 Bioethics IPR and Regulatory affairs BM 24.324 Computational Bioengineering Laboratory BM 24.322 Enzymology Laboratory BM 24.320 Plant Biotechnology Laboratory
6. Program Elective / MOOCs (5 Courses)	15	MOOC – 01 Program Elective – 04	
7. Project / Summer Internship/ Colloquium (10 Courses)	20	Summer Internship – 02	Project – 02 Capstone Project – 02 PBL - 04
8. Proficiency (Non- Credit / Non-Graded) (4 Courses)	00	SEFS – 04	
Total	163	76 Courses	

Course Structure

B. Tech. in Bioengineering (4 Year Program) Effective from Academic Session 2025-29

First Year - Autumn Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.101	Human Values & Professional Ethics	2	0	0	2	3	10	40	50
MA 23.105	Basic Mathematics	3	1	0	4	3	10	40	50
CY 23.101	Engineering Chemistry	3	0	0	3	3	10	40	50
BM 23.101	Biology for Engineers	3	0	0	3	3	10	40	50
EC 25.101	Basics of Electronics Engineering	3	0	0	3	3	10	40	50
ME 23.111	Computer Aided Engineering Drawing	0	0	4	2	2	50		50
CY 23.111	Chemistry Laboratory	0	0	2	1	2	50		50
EC 23.111	Electronics Laboratory	0	0	2	1	2	50		50
CY 23.102	Environmental Sciences	2	0	0	2	3	10	40	50
PB 25.101	Project Based Learning I	0	0	2	1	0	50		50
SF 101	Personal Grooming and Fine Dining (Non-Credit)	0	0	2	1	1	50		50
	Total	16	1	12	22				

First Year - Spring Semester									
Course Code	Course Title	Contact Hours Per Week			Credits	ETE Duration (Hours)	Weightage		
		L	T	P			CW	MTE	ETE
UC 23.102	Pragmatic English Communication	2	0	0	2	3	10	40	50
MA 23.106	Applied Mathematics-I	3	1	0	4	3	10	40	50
PY 23.101	Engineering Physics	3	0	0	3	3	10	40	50
EE 25.101	Basics of Electrical Engineering	3	0	0	3	3	10	40	50
CS 23.101	Programming for Problem Solving I	3	0	0	3	3	10	40	50
CS 23.111	Programming Laboratory	0	0	4	2	2	50		50
PY 23.111	Physics Laboratory	0	0	2	1	2	50		50
EE 23.111	Electrical Laboratory	0	0	2	1	2	50		50
ME 23.112	Mechanical Workshop	0	0	2	1	2	50		50
PB 25.102	Project Based Learning II	0	0	2	1	0	50		50
SF 102	Social Grooming, Home & Décor and Business Communication (Non-Credit)	0	0	2	1	1	50		50
	Total	14	1	14	21				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21							43

Course Structure

B. Tech. in Bioengineering (4 Year Program) Effective from Academic Session 2025-29

Second Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
MA 23.205	Applied Mathematics-II	3	1	0	4	3	10	40	50
BM 24.205	Cell Biology	3	0	0	3	3	10	40	50
BM 24.207	Microbiology	3	0	0	3	3	10	40	50
BM 24.209	Genetics	3	0	0	3	3	10	40	50
BM 24.211	Bioprocess Technology	3	0	0	3	3	10	40	50
BM 24.213	Bioprocess Technology Laboratory	0	0	2	1	2	50		50
BM 24.215	Cell Biology Laboratory	0	0	2	1	2	50		50
BM 24.217	Microbiology Laboratory	0	0	2	1	2	50		50
BM 24.219	Genetics Laboratory	0	0	2	1	2	50		50
PB 25.201	Problem Based Learning III	0	0	2	1	0	50		50
SF 23.201	Personal Grooming, Fine Dining and Home & Safety (Non Credit)	0	0	2	1	2	50		50
		15	1	12	21				

Second Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
UC 25.202	Management and Entrepreneurship	2	0	0	2	3	10	40	50
	University Elective-I	3	0	0	3	3	10	40	50
BM 24.208	Biochemistry	3	0	0	3	3	10	40	50
BM 24.210	Molecular Biology	3	0	0	3	3	10	40	50
BM 24.212	Analytical Tools for Biotechnologist	3	0	0	3	3	10	40	50
BM 24.214	Immunology and Immuno-technology	3	0	0	3	3	10	40	50
BM 24.216	Fundamentals of Biological Engineering	3	0	0	3	3	10	40	50
BM 24.218	Biochemistry Laboratory	0	0	2	1	2	50		50
BM 24.220	Molecular Biology Laboratory	0	0	2	1	2	50		50
BM 24.222	Bioanalytical Tools Laboratory	0	0	2	1	2	50		50
BM 24.224	Immunology Laboratory	0	0	2	1	2	50		50
PB 25.202	Problem Based Learning IV	0	0	2	1		50		50
SF 23.202	Social Grooming and Professional Skills (Non Credit)	0	0	2	1	2	50		50
		20	0	12	25				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25					89

Course Structure

B. Tech. in Bioengineering (4 Year Program) Effective from Academic Session 2025-29

Third Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
BM 24. 301	Bioinformatics	3	0	0	3	3	10	40	50
BM 24. 303	Genetic Engineering	3	0	0	3	3	10	40	50
BM 24. 305	Drug Design and Development	3	0	0	3	3	10	40	50
BM 24. 307	Biomedical Engineering Fundamentals	3	0	0	3	3	10	40	50
BM 23. 301	Biomaterials	3	0	0	3	3	10	40	50
	Program Elective-I	0	0	0	3	3	Based on MOOC course examination grading*		
BM 24. 321	Bioinformatics Laboratory	0	0	2	1	2	20	40	40
BM 24. 323	Genetic Engineering Laboratory	0	0	2	1	2	20	40	40
BM 24. 325	Biomedical Engineering Laboratory	0	0	2	1	2	20	40	40
BM 23. 321	Biomaterials Laboratory	0	0	2	1	2	20	40	40
BM 23. 331	Summer Internship-I**	0	0	0	2		100		
BM 23. 333	Project-I	0	0	4	2		50		50
GE 25.301	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
					26				

Third Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
BM 24. 302	Enzymology	3	0	0	3	3	10	40	50
BM 24. 306	Environmental Biotechnology	3	0	0	3	3	10	40	50
BM 23. 306	Biomechanics	3	0	0	3	3	10	40	50
BM 23. 312	Data Analysis in Health Care	3	0	0	3	3	10	40	50
BM 24. 314	Bioseparation Techniques	3	0	0	3	3	10	40	50
BM 24. 316	Bioethics IPR and Regulatory affairs	3	0	0	3	3	10	40	50
BM 24. 318	Environmental Biotechnology Laboratory	0	0	2	1	2	20	40	40
BM 24. 324	Computational Bioengineering Laboratory	0	0	2	1	2	20	40	40
BM 24. 322	Enzymology Laboratory	0	0	2	1	2	20	40	40
BM 23.334	Project-II	0	0	4	2		50		50
GE 25.302	Proficiency (Non Credit, Non Graded)	0	0	2	1				100
					23				

*The course may be taken through MOOC. NPTEL/SWAYAM/Coursera will be the authorized platform for MOOC course. A minimum 8 week duration is required to earn 3 credits. After successful completion of this MOOC course, the student shall provide the successful completion status/certificate to the University (COE) through HOD/NPTEL/Coursera coordinator."

**Summer Internship-I must be carried out during the summer vacation, specifically between the end of the second year and the start of the third year.

*Proficiency (Non Credit, Non Graded) Shall be measured through level of participation in skill development programs i.e. sports, yoga, life skills, music, fine arts as decided by departmental committee.

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	21	25	26	23			138

Course Structure

B. Tech. in Bioengineering (4 Year Program) Effective from Academic Session 2025-29

Fourth Year -- Autumn Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
	University Elective-II	3	0	0	3	3	10	40	50
	Programme Elective-II	3	0	0	3	3	10	40	50
	Programme Elective-III	3	0	0	3	3	10	40	50
BM 23.421	Summer Internship-II	0	0	0	2		100		
BM 23.423	Capstone Project-I	0	0	0	2		100		
		9	0	0	13				

Fourth Year -- Spring Semester									
		Contact Hours per Week				ETE Duration (Hours)	Weightage		
Course Code	Course Title	L	T	P	Credits		CW	MTE	ETE
	Programme Elective-IV	3	0	0	3	3	10	40	50
	Programme Elective-V	3	0	0	3	3	10	40	50
BM 23.422	Capstone Project-II	0	0	0	6		100		
		9	0	0	12				

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	21	21	22	23	26	23	13	12	162

	Credit Distribution across all components							
Semester	UC	UE	BS	ES	PC	PE	Proj/ SIP	Total
First	02	00	11	08	00	00	01	22
Second	02	00	08	10	00	00	01	21
Third	00	00	04	00	16	00	01	21
Fourth	02	03	04	00	15	00	01	25
Fifth	00	00	00	00	19	03	04	26
Sixth	00	00	00	00	21	00	02	23
Seventh	00	03	00	00	00	06	04	13
Eight	00	00	00	00	00	06	06	12
Total	06	06	27	18	75	15	20	163

UC – University Core
UE – University Elective
BS – Basic Science
ES- Engineering Science
PC- Program Core
PE- Program Elective
Proj/SIP – Project SIP

List of Electives
B. Tech. in Bioengineering

Program Elective	Course Code	Course Name
Program Elective -1		MOOC
Program Elective -2	BM 23.304	Medical Image Processing
	BM 24. 401	Metabolic Engineering
	BM 23. 417	Nanotechnology in Medicine
	BM 23. 414	Analytical Instrumentation and Techniques
	BM 24. 403	Medical Biotechnology
Program Elective -3	BM 24. 405	Animal Biotechnology
	BM 23. 412	Tissue Engineering
	BM 23. 421	Artificial Organs and Implants
	BM 24. 407	Industrial Biotechnology
	BM 24. 409	Stem Cell Technology
Program Elective -4	BM 23. 416	Transport Phenomena in Biological Systems
	BM 24. 402	Food Technology
	BM 24. 324	Genomics and Proteomics
	BM 24. 404	Cancer Biology
	BM 23. 425	BioMEMS
	BM 24.306	Environmental Biotechnology
	BM 23. 411	Telemedicine
	BM 23. 310	Hospital Planning and Engineering
	BM 23. 303	Medical Imaging Systems
	BM 23. 419	Rehabilitation Engineering
Program Elective -5	BM23. 418	Medical Radiation safety
	BM 24. 423	Data Mining And Machine Learning for Biomedicine
	BM 24. 408	3D Printing & Design
	BM 24. 410	Internet of Things
	BM 24. 412	Protein Engineering