SMIMS SIKKIM MANIPAL UNIVERSITY

SIKKIM MANIPAL INSTITUTE OF MEDICAL SCIENCES

Syllabus for M. Sc. Medical Biotechnology SMIMS, SMU

From the Academic Session: 2025-2026

CHOICE BASED CREDIT SYSTEM (CBCS)

Postgraduate Programme

Framed According to The National Education Policy (NEP 2020)

Name of the Degree/ Programme: M. Sc.

Discipline: Medical Biotechnology

Total Credits for the Programme: 80

Duration: 2 Years

Programme Objectives:

- The main objective of this course is to attain the in-depth knowledge of the interdisciplinary fields of biotechnology such as medical genetics, immunotechnology, bioinformatics, recombinant DNA technology, and stem cell biology.
- To provide knowledge and skills in different feields of biotechnology, with a major focus on health-related aspects.
- To design, analyze, conduct and interpret the experiments and data for the development of process/product within the realistic constraints.

Course Outcomes:

- Advanced understanding of biotechnology that can be applied in innovation, and problem solving through gaining knowledge and hands-on research skills.
- The rigorous project work and wet / dry lab training enable students to independently design and perform experiments.
- Students carry out research projects in Central Referral Hospital, SMIMS, SMU, thus students get exposure to different aspects of human health and diseases
- Students develop scientific communication skills, critical analysis, bioethics, intellectual property rights etc.
- Students will get opportunity to learn subjects of their interest other than core subjects, which will provide them holistic education.

Course Structure for M. Sc. Medical Biotechnology

YEAR/ SEMESTER	SUBJECTS	NATURE	CODE	MARKS		CREDIT
				IA	UE	
1st Year/ Semester I	Bioinformatics (Th)	Major	BT-2101	30	70	3
	Immunology (Th)	Major	BT-2102	30	70	3
	Animal Tissue Culture (Th)	Major	BT-2103	30	70	3
	Bioinformatics (Pr)	Major	BT-2104	30	70	3
	Immunology (Pr)	Major	BT-2105	30	70	3
	Animal Tissue Culture (Pr)	Major	BT-2106	30	70	3
	Seminar	AEC	BT-2107	50	50	2
	Total credit in semester I					**20**
1st Year Semester II	Recombinant DNA Technology (Th)	Major	BT-2201	30	70	3
	Stem cell & regenerative medicine (Th)	Major	BT-2202	30	70	3
	Medical genetics (Th)	Major	BT-2203	30	70	3
	General Pathology (Th)	Minor	BT-2204	30	70	3
	Recombinant DNA Technology (Pr)	Major	BT-2205	30	70	2
	Stem cell & regenerative medicine (Pr)	Major	BT-2206	30	70	2
	Medical Genetics (Pr)	Major	BT-2207	30	70	2
	General Pathology (Pr)	Minor	BT-2208	30	70	2
	Total credit in semester II					**20**
	Total credit in semester I + II					**40**
Exit option with Postgraduate Diploma on completion of courses equal to 40 credits						
2nd Year/ Semester III	Research methodology & techniques (Th)	AEC	BT-2301	30	70	4
	Swayam/Elective I/Elective II	GEC #	BT-2302/ BT-2302 E I/ BT-2302 E II	30	70	2
	Genomics & Personalized Medicine (Th)	SBC	BT-2303	30	70	2
	Research methodology & techniques (Pr)	AEC	BT-2304	30	70	4
	Genomics & Personalized Medicine (Pr)	SBC	BT-2305	30	70	2
	Dissertation Part I*: proposal writing & literature review	--	BT-2306	50	50	6
	Total credit in semester III					**20**
2nd Year/ Semester IV	Dissertation Part II**: project work, thesis & viva	--	BT-2401	50	50	20
	Total credits in semester IV					**20**
	Total credits in semester III + IV					**40**
	Total credits in semester I + II + III + IV					**80**

IA- Internal Assessment/Preparative, UE- University Examination/ Summative, Th- Theory, Pr- PracticalAEC: Ability Enhancement Course, GEC- Generic Elective Course, SBC- Skill Based Course

[#] One choice will be opted by students
* University examination will be based on presentation & viva.
** University examination will be based on thesis evaluation, presentation & viva