VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF BIO SCIENCES AND TECHNOLOGY

M.Tech Biotechnology

(M.Tech BBT)

Curriculum

(2020-2021 admitted students)

VISION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

Transforming life through excellence in education and research.

MISSION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

World class Education: Excellence in education, grounded in ethics and critical thinking, for improvement of life.

Cutting edge Research: An innovation ecosystem to extend knowledge and solve critical problems.

Impactful People: Happy, accountable, caring and effective workforce and students.

Rewarding Co-creations: Active collaboration with national & international industries & universities for productivity and economic development.

Service to Society: Service to the region and world through knowledge and compassion.

VISION STATEMENT OF THE SCHOOL OF BIO SCIENCES AND TECHNOLOGY

To nurture high-quality bioengineers and science graduates with the potential to innovate, invent and disseminate knowledge for the benefit of society and environment.

MISSION STATEMENT OF THE SCHOOL OF BIO SCIENCES AND TECHNOLOGY

- To create opportunities for multi-disciplinary education, training and research in biotechnology and bio-sciences.

- To instill a spirit of innovation and creativity in young minds from across the globe with sound research aptitude.
- To foster ethically strong biologists who effectively contribute towards the growth of the nation.

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M.TECH BIOTECHNOLOGY

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs).

1. Graduates will be engineering practitioners and leaders, who would help solve industry's technological problems
2. Graduates will be engineering professionals, innovators or entrepreneurs engaged in technology development, technology deployment, or engineering system implementation in industry
3. Graduates will function in their profession with social awareness and responsibility
4. Graduates will interact with their peers in other disciplines in industry and society and contribute to the economic growth of the country
5. Graduates will be successful in pursuing higher studies in engineering or management
6. Graduates will pursue career paths in teaching or research

M.TECH BIOTECHNOLOGY

PROGRAMME OUTCOMES (POs).

PO_01: Having an ability to apply mathematics and science in engineering applications.

PO_03: Having an ability to design a component or a product applying all the relevant standards and with realistic constraints, including public health, safety, culture, society and environment

PO_04: Having an ability to design and conduct experiments, as well as to analyse and interpret data, and synthesis of information

PO_05: Having an ability to use techniques, skills, resources and modern engineering and IT tools necessary for engineering practice

PO_06: Having problem solving ability- to assess social issues (societal, health, safety, legal and cultural) and engineering problems

PO_07: Having adaptive thinking and adaptability in relation to environmental context and sustainable development

PO_08: Having a clear understanding of professional and ethical responsibility

PO_11: Having a good cognitive load management skills related to project management and finance

M.TECH BIOTECHNOLOGY

PROGRAMME SPECIFIC OUTCOMES (PSOs)

1	Acquire students with skills of biotechnology and provide solutions through industry-academia interface
2	Empower the students to be effective entrepreneurs and excellent researchers to invent unique products for societal need with proper ethical statutes
3	Ability to independently carry out research and development work to solve the practical problems

M.TECH BIOTECHNOLOGY

CREDIT STRUCTURE

Category-wise Credit distribution

Category	Credits
University Core (UC)	27
Programme Core (PC)	20
Programme Elective (PE)	17
University Elective (UE)	6
Bridge Course (BC)	0
Total Credits	**70**

M.TECH BIOTECHNOLOGY

DETAILED CURRICULUM

University Core

S. No.	Course Code	Course Title	L	T	P	J	C
1	BIT6099	Master's Thesis	0	0	0	0	16
2	MAT6001	Advanced Statistical Methods	2	0	2	0	3
3	SET5001	Science, Engineering and Technology Project – I	0	0	0	0	2
4	SET5002	Science, Engineering and Technology Project – II	0	0	0	0	2
5	EFL5097	English / Foreign Language basket	0	0	0	0	2
6	STS6777	Soft Skills Basket	0	0	0	0	2

Programme Core

S. No.	Course Code	Course Title	L	T	P	J	C
1	BIT5001	Advanced Biochemistry	3	0	2	0	4
2	BIT5002	Bioprocess Technology	3	0	2	0	4
3	BIT5003	Computational Biology	2	0	2	4	4
4	BIT5004	Analytical Techniques in Biotechnology	2	0	0	4	3
5	BIT5005	Genetic Engineering	3	0	4	0	5

M.TECH BIOTECHNOLOGY

Programme Electives

S. No.	Course Code	Course Title	L	T	P	J	C
1	BIT6001	Industrial Biotechnology	3	0	0	0	3
2	BIT6002	Nanobiotechnology	3	0	0	0	3
3	BIT6003	Protein Engineering and Technology	3	0	0	0	3
4	BIT6004	Equipment Design, Optimization of Techniques and Bioprocess Economics	3	0	0	0	3
5	BIT6005	Programming for Biologists	3	0	0	0	3
6	BIT6006	Biomolecular Interactions and Informatics	3	0	0	0	3
7	BIT6007	Food Process Technology	3	0	0	0	3
8	BIT6008	Natural Product Technology	3	0	0	0	3
9	BIT6009	Metabolomics and Metabolic Engineering	3	0	0	0	3
10	BIT6010	Plant Biotechnology	3	0	0	0	3
11	BIT6011	Animal Biotechnology	3	0	0	0	3
12	BIT6012	Pharmaceutical Biotechnology	3	0	0	0	3
13	BIT6013	Environmental Biotechnology	2	0	0	4	3
14	BIT6014	Aquatic Biotechnology	3	0	0	0	3
15	BIT6015	Immunotechnology	3	0	0	0	3
16	BIT6016	Genomics	2	0	0	4	3
17	BIT6017	Proteomics	3	0	0	0	3
18	BIT6018	Cellular and Molecular Neuroscience	3	0	0	0	3

19	BIT6019	Cancer Biology	3	0	0	0	3
20	BIT6020	Medical Biotechnology	3	0	0	0	3
21	BIT6021	Microbial Technology	2	0	0	4	3

University Electives

Course offered from other M.Tech., Programmes and University Elective of Biotechnology Course Basket (Subject to CGPA Conditions).

Bridge Courses (Not counted for Credits)

S. No.	Course Code	Course Title	L	T	P	J	C
1	ENG5001	Fundamentals of Communication Skills	0	0	2	0	1