School of Bio Sciences and Technology

M.Sc. Biotechnology

Curriculum and Syllabus

(2020-2021 admitted students)

VIT®
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

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.

M.Sc., BIOTECHNOLOGY

Programme Educational Objectives (PEO)

PEO	Statements
PEO1	Graduates will be practitioners and leaders in their chosen field
PEO2	Graduates will function in their profession with social awareness and responsibility
PEO3	Graduates will interact with their peers in other disciplines in their work place and society and contribute to the economic growth of the country
PEO4	Graduates will be successful in pursuing higher studies in their chosen field
PEO5	Graduates will pursue career paths in teaching or research

M.Sc., BIOTECHNOLOGY

Programme Outcomes (POs)

POs	PO Statements
PO_1	Having a clear understanding of subject-related concepts and contemporary issues
PO_2	Having problem-solving ability for social issues
PO_3	Having a clear understanding of professional and ethical responsibility
PO_4	Having cross-cultural competency exhibited by working in teams
PO_5	Having a good working knowledge of communicating in English

M.Sc., BIOTECHNOLOGY

Programme Specific Outcomes (PSOs)

On completion of M.Sc., (Biotechnology) programme, graduates will be able to

PSO	Statements
PSO1	Apply the principles of molecular biology methods with emphasis on the application of recombinant DNA technology to animals, plants and microbial organisms
PSO2	Manipulate living organisms and biological systems to produce products that advance healthcare, medicine, agriculture, food, pharmaceuticals and environmental control
PSO3	Ability to independently carry out research and development work to solve the practical problems

Category-wise Credit distribution

CREDIT INFO		
S.no	**Catagory**	**Credit**
1	Programme Core	23
2	Programme Elective	22
3	University Core	29
4	University Elective	6
Total Credits		80

Programme Core									
Sl.no	Course Code	Course Title	Course Type	Version	L	T	P	J	Credit
1	BST5001	Microbiology	Embedded Theory, Lab and Project	1	2	0	2	4	4
2	BST5002	Advanced Biochemistry	Embedded Theory and Lab	1	3	0	2	0	4
3	BST5003	Cell and Molecular Biology	Embedded Theory and Project	1	2	0	0	4	3
4	BST5004	Immunology	Theory Only	1	2	0	0	0	2
5	BST5009	Analytical Techniques in Biotechnology	Embedded Theory, Lab and Project	1	2	0	2	4	4
6	BST5010	Genetic Engineering	Embedded Theory and Project	1	2	0	0	4	3
7	BST5011	Bioinformatics	Embedded Theory and Project	1	2	0	0	4	3

Programme Elective									
sl.no	Course Code	Course Title	Course Type	Version	L	T	P	J	Credit
1	BST5005	Medical Diagnostics	Theory Only	1.1	3	0	0	0	3
2	BST5006	Tissue Engineering and Regenerative Medicine	Theory Only	1	3	0	0	0	3
3	BST5007	Medical Biotechnology	Theory Only	1.1	3	0	0	0	3
4	BST5008	Industrial Biotechnology	Embedded Theory and Lab	1	2	0	2	0	3
5	BST6001	Cancer Biology and Therapeutics	Embedded Theory and Project	1	2	0	0	4	3
6	BST6002	Stem Cell Biology	Theory Only	1	3	0	0	0	3
7	BST6003	Clinical and Translational Research	Theory Only	1.1	3	0	0	0	3

8	BST6004	Forensic Science and Technology	Embedded Theory and Project	1	2	0	0	4	3
9	BST6005	Pharmacology and Toxicology	Theory Only	1	3	0	0	0	3
10	BST6006	Medical Informatics	Embedded Theory and Project	1	2	0	0	4	3
11	BST6007	Nutraceuticals	Embedded Theory, Lab and Project	1	2	0	2	4	4
12	BST6008	Marine Biotechnology	Theory Only	1.1	3	0	0	0	3
13	BST6009	Nanobiotechnology	Embedded Theory and Project	1	2	0	0	4	3
14	BST6010	Applied Enzyme Technology	Embedded Theory and Lab	1	3	0	2	0	4
15	BST6011	Metabolic Engineering	Theory Only	1.1	3	0	0	0	3
16	BST6012	Plant Biotechnology	Embedded Theory, Lab and Project	1	2	0	2	4	4
17	BST6013	Bioremediation	Embedded Theory and Project	1	2	0	0	4	3
18	BST6014	Genomics and Proteomics	Theory Only	1	3	0	0	0	3
19	BST6015	Signal Transduction	Theory Only	1	2	0	0	0	2
20	BST6016	Cellular and Molecular Biophysics	Embedded Theory and Project	1	3	0	0	4	4

University Core									
sl.no	**Course Code**	**Course Title**	**Course Type**	**Version**	**L**	**T**	**P**	**J**	**Credit**
1	BST6099	Masters Thesis	Project	1	0	0	0	0	14
2	EFL6097	English and Foreign Language	Basket	1	0	0	0	0	2
3	MSM5001	Biostatistics	Embedded Theory and Lab	1.1	2	0	2	0	3
4	RES5001	Research Methodology	Embedded Theory and Project	1	1	0	0	4	2
5	SET5001	Science, Engineering and Technology Project - I	Project	1	0	0	0	0	2
6	SET5002	Science, Engineering and Technology Project - II	Project	1	0	0	0	0	2
7	SET5003	Science, Engineering and Technology Project – III	Project	1	0	0	0	0	2
8	STS4777	Soft Skills	Basket	1	0	0	0	0	2