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Undergraduate Programme in BIOTECHNOLOGY

Curriculum and Syllabus for B.Sc Biotechnology

(With effect from the Academic Year 2020-21)

February - 2020

Note: The Board of Studies is designed Learning Outcomes Based Curriculum Framework of Under Graduate Biotechnology Programme prescribed by UGC

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Preamble

Biotechnology is an area of biology that uses living processes, organisms or system to manufacture products or technology intended to improve the quality of human life. It is an integrated science with interdisciplinary knowledge of biochemistry, Molecular Biology, Microbiology, Genetics, Plant and Animal sciences, Environmental and Pharmaceutical sciences.

Biotechnology has the potential to bring a tremendous change in the socio-economic status of the people by creating a positive impact with food security, Animal husbandry, fisheries, assurance of quality food products to the consumers, environmental protection, health care etc.

The Biotechnology course has the opportunities in health care sector and diagnostics, Research with Institutes, Universities, Animal health, Vaccine industry, Agriculture, Food technology, Pharmaceutical industry, Industrial and Environmental Sciences, Bioinformatics, Biosafety and Education.

The syllabus of Biotechnology is framed in such a way so as to give a fundamental understanding in the different inter disciplinary areas of Cell Biology, Biochemistry, Microbiology, Genetics, Immunology, Animal and plant science, Environmental and Pharmaceutical sciences.

The practical syllabus is designed to enable the students to link and support with their theory background. This also imparts the knowledge of handling instruments and the understanding of interdisciplinary facet of Biotechnology.

The syllabus is also equipped with Entrepreneurial development to help students to start their own enterprises as job providers which will instill confidence and to make smarter plans for future development.

Aim of the Programme:

The aim of the programme is to provide students with a wide knowledge in different areas of Biotechnology and to prepare them for employment and research in this rapidly growing field. This programme enables the students with innovative ideas for business creation, creating job opportunities, and the importance of entrepreneurship for facing the challenges and to improve the economy of the nation.

Nature and extent of the Programme:

The field of Biotechnology is an interdisciplinary science and is growing at a tremendous rate with application in medicine, agriculture, environment and nanotechnology. This tremendous growth is because of the integration of new technologies in biological research.

New upcoming thrust areas like Marine Biotechnology, Research Methodology, Bio entrepreneurship and Nanotechnology is introduced in this programme. The programme also offers students the freedom to choose the electives based on their preferences. This will help the students to start, grow their own enterprises and make smarter plans for future development.

Graduate attributes:

The graduate after completing the course becomes a full fledged bio entrepreneur with a complete understanding of the various concepts of Biotechnology. This course is designed in such a way as to kindle creative thinking abilities with problem solving capacity and also research attitude. This programme will enable the students to be self employed, and bring constructive changes to their professional life, work place and to the community at large.

COURSE STRUCTURE:**FIRST SEMESTER**

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part-I	Language Paper – I	6	3	25	75	100
Part-II	BP2-ENG01-Communicative English I	3	3	50	50	100
Part-III	BBT-DSC01 - Cell and Molecular Biology	5	4	25	75	100
	BBT-DSC02 - Core Practical - I	3	4	Examination will be held in II Semester		
	BBT-DSA01 – Allied I - Fundamentals of Microbiology	6	3	25	75	100
	Allied Practical-I	3	Examination will be held in II Semester			
Part-IV	Basic Tamil/Adv. Tamil/NME*	-	2	25	75	100
	BP4-ELSC 01-English for Life Sciences I	4	4	50	50	100

*NME: Choose any one from the other department

SECOND SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part-I	Language Paper – II	6	3	25	75	100
Part-II	BP2-ENG02-Communicative English II	3	3	50	50	100
Part-III	BBT-DSC03 - Genetics	5	4	25	75	100
	BBT-DSC04 – Core Practical I & II	3	4	40	60	100
	BBT-DSA02 – Allied II - Chemistry	6	3	25	75	100
	BBT-DSAP1 – Allied Practicals I & II	3	4	40	60	100
Part-IV	Basic Tamil/Adv. Tamil/ NME*	-	2	25	75	100
	BP4-ELSC 02-English for Life Sciences II	4	4	50	50	100

*NME: Choose any one from the other department

THIRD SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part-I	Language Paper – III	6	3	25	75	100
Part-II	BP2-ENG03- Language Through Literature- I	6	3	50	50	100
Part-III	BBT-DSC05 - Genetic Engineering	6	4	25	75	100
	BBT-DSC06 - Core Practical - III	3	4	Examination will be held in IV Semester		
	BBT-DSA03 - Essentials of Biochemistry	6	3	25	75	100
	Allied Practical III	3	Examination will be held in IV Semester			
Part-IV	Soft Skills	-	3	50	50	100
	Environmental Studies	-	Examination will be held in IV Semester			

FOURTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Hrs	Ext. Marks	Total
Part-I	Language Paper – IV	6	3	25	75	100
Part-II	BP2-ENG04- Language Through Literature- II	6	3	50	50	100
Part-III	BBT-DSC07 - Plant Biotechnology	6	4	25	75	100
	BBT-DSC08 - Core Practical III & IV	3	4	40	60	100
	BBT-DSA04 - Bioinstrumentation and Biostatistics	6	3	25	75	100
	BBT-DSAP2 - Allied Practicals - III & IV	3	4	40	60	100
Part-IV	Soft Skills	-	3	50	50	100
	Environmental Studies	2	2	25	75	100

FIFTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. marks	Total
Part-III	BBT-DSC09 - Animal & Medical Biotechnology	6	4	25	75	100
	BBT-DSC10 - Bioinformatics	6	4	25	75	100
	BBT-DSC11 - Immunology	5	4	25	75	100
	BBT-DSC12 - Core Practical - V	6	4	Examination will be held in VI Semester		
	BBT-DSE1A - Pharmaceutical Biotechnology(OR) BBT-DSE1B – Nano Biotechnology	5	5	25	75	100
Part-IV	Value Education	2	2	25	75	100

SIXTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part-III	BBT-DSC13 - Industrial Biotechnology	6	4	25	75	100
	BBT-DSC14 - Environmental Biotechnology	6	4	25	75	100
	BBT-DSC15 - Core Practical V & VI	6	4	40	60	100
	BBT-DSE2A - Bio-Entrepreneurship (OR) BBT-DSE2B - Marine Biotechnology	5	5	25	75	100
	BBT-DSE03 - Basics in Research Methodology	5	5	25	75	100
Part-V	Extension Activities	2	1			

*Electives (one can be chosen from elective II and Elective III is compulsory) – Final semester

Course Content	Non major Electives	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
I Semester	Choice of subjects: <ul style="list-style-type: none"> • Animal Physiology • Biodiversity • Food and Nutrition • Microbiology 	2	2	25	75	100
II Semester	Choice of subjects: <ul style="list-style-type: none"> • Herbal Medicine • Good Laboratory Practices • Behavioral Biology • Chemistry 	2	2	25	75	100