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Undergraduate Programme in

Microbiology

Curriculum and Syllabus for

B.Sc., Microbiology

(With effect from the Academic Year 2020-21)

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

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1. Preamble

Microbiology is a wide discipline of biology which encompasses five groups of microorganisms i.e. bacteria, protozoa, algae, fungi, and viruses. It studies their interaction with their environments as well as how these organisms are harnessed in human endeavour and their impact on society. The study has its extensions in various other conventional and advanced fields of biology by employing microbes as study models. Since the inception of microbiology as a branch of science, it has remained an ever-expanding field of active research, broadly categorized as pure and applied science. Knowledge of different aspects of Microbiology has become crucial and indispensable to the society. Study of microbes has become an integral part of education and human progress. There is a continuous demand for microbiologists as work force in education, industry and research. Hence Microbiological tools and techniques are used in almost all fields which are indispensable for people working in fields like Agriculture, Food Industry, Medical Sciences, Environmental Science and Pharmaceutical Science etc...The syllabi for the three-year B.Sc. degree course in Microbiology are framed in such a way that the students at the end of the course, can be adept at Microbiological techniques for pursuing higher studies and can also apply Microbiological methods judiciously to a variety of industrial needs.

2. Programme Learning Outcome

2.1 Nature and Extant of the Programme

The undergraduate programme in Microbiology is the first level of college or university degree in the country as in several other parts of the world. After obtaining this degree, a microbiologist may enter into the job market or opt for undertaking further higher studies in the subject. After graduation the students may join industry, academia, or public health departments and play their role as microbiologists in a useful manner contributing their knowledge to the welfare of the society. Thus the undergraduate level degree in microbiology must prepare the students for all these objectives. The LOCF curriculum has been developed encompassing all the diversified aspects of Microbiology with reasonable depth of knowledge and skills so to as to specialize them in the various aspects of the subject. It also equips them with the expected professional expertise.

2.2 Aim of the Programme

The aim of the undergraduate degree in Microbiology is to make students knowledgeable about the various basic concepts in a wide ranging context which involve the use of knowledge and skills of Microbiology. Their understanding, knowledge and skills in Microbiology needs to be developed through a thorough teaching learning process in the class, practical skills through the laboratory work, their presentation and articulation skills, exposure to industry and interaction with industry experts.

2.3 Graduate Attributes

The students graduating in this degree must have an intricate knowledge of the fundamentals of Microbiology as applicable to wide ranging contexts. They should have the appropriate skills of Microbiology so as to perform their duties as microbiologists. They must be able to analyze the problems related to microbiology and come up with most suitable solutions. As microbiology is an interdisciplinary subject the students might have to take inputs from other areas of expertise. So the students must develop the spirit of team work. Microbiology is a very dynamic subject and practitioners might have to face several newer problems. To this end, the microbiologists must be trained to be innovative to solve such newer problems. Several newer developments are taking place in microbiology. The students are trained to pick up leads and see the possibility of converting these into products through entrepreneurship. Furthermore, the students are made to interact with industry experts so that they may be able to see the possibility of their transition into entrepreneurs. They are also made aware of the requirements of developing a Microbiology enterprise by having knowledge of patents, copyrights and various regulatory processes to make their efforts a success.

Besides attaining the attributes related to the profession of Microbiology, the graduates in this discipline should also develop ethical awareness which is mandatory for practising a scientific discipline including ethics of working in a laboratory and ethics followed for scientific publishing of their research work in future. The students graduating in microbiology should also develop excellent communication skills both in the written as well as spoken language which is indispensable for them to pursue higher studies from some of the best and internationally acclaimed universities and research institutions spread across the globe.

3. 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	BMY-DSC01: General Microbiology and Microbial Physiology	6	4	25	75	100
	BMY-DSC02: Major Practical-I (General Microbiology and Microbial Physiology)	3	4	40	60	100
	BMY-DSA01: Biochemistry (Theory)	5	3	25	75	100
	BMY-DSAP1: Biochemistry (Practical)	3	2	40	60	100
Part-IV	*Basic Tamil/Adv. Tamil/NME-I*	-	2	25	75	100
	BP4-ELSC 01-English for Life Sciences I	4	4	50	50	100

*Choose any one paper 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	BMY-DSC03: Basic and Applied Immunology	6	4	25	75	100
	BMY-DSC04: Major Practical II (Basic and Applied Immunology)	3	4	40	60	100
	BMY-DSA02: Bioinstrumentation (Theory)	5	3	25	75	100
	BMY-DSAP2: Bioinstrumentation (Practical)	3	2	40	60	100
Part-IV	Basic Tamil/Adv. Tamil/ NME-II	-	2	25	75	100
	BP4-ELSC 02-English for Life Sciences II	4	4	50	50	100

*Choose any one paper 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	BMY-DSC05: Molecular Biology	6	4	25	75	100
	BMY-DSC06: Major Practical III (Molecular Biology)	3	4	40	60	100
	BMY-DSA03: Clinical Lab Technology (Theory)	6	3	25	75	100
	BMY-DSAP3: Clinical Lab Technology (Practical)	3	2	40	60	100
Part-IV	Environmental Studies	-	Examination will be held in Semester IV			
	Soft Skills	-	3	50	50	100

FOURTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part-I	Language Paper – IV	6	3	25	75	100
Part-II	BP2-ENG03-Language Through Literature- II	6	3	50	50	100
Part-III	BMY-DSC07: Soil and Agricultural Microbiology	6	4	25	75	100
	BMY-DSC08: Major Practical IV (Soil and Agricultural Microbiology)	3	4	40	60	100
	BMY-DSA04: Clinical Biochemistry (Theory)	6	3	25	75	100
	BMY-DSAP4: Clinical Biochemistry (Practical)	3	2	40	60	100
Part-IV	Environmental Studies	-	2	25	75	100
	Soft skills	-	3	50	50	100

FIFTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. marks	Total
Part-III	BMY-DSC09: Medical Bacteriology	6	4	25	75	100
	BMY-DSC10: Medical Mycology and Parasitology	6	4	25	75	100
	BMY-DSC11: Medical Virology	6	4	25	75	100
	BMY-DSC12: Major Practical V (Medical Bacteriology, Mycology, Parasitology and Virology)	6	4	40	60	100
	BMY-DSE01: Biotechnology and Genetic Engineering	5	5	25	75	100
Part-IV	Value Education	1	2	25	75	100

SIXTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part-III	BMY-DSC13: Environmental Microbiology	6	4	25	75	100
	BMY-DSC14: Food and Dairy Microbiology	6	4	25	75	100
	BMY-DSC15: Major Practical VI (Environmental, Food and Dairy Microbiology)	6	4	40	60	100
	BMY-DSE02: Industrial and Pharmaceutical Microbiology	6	5	25	75	100
	BMY-DSE03: Microbial Marketable Products	5	5	25	75	100
Part-V	Extension Activities	1	1			

NOTE: “The University Practical examinations for both core and allied of B.Sc. Microbiology will be conducted only at the end of the academic year (i.e. even semesters only)”
