



University of Madras

Chepauk, Chennai 600 005

[Est.1857, State University, NAAC 'A⁺⁺' Grade, CGPA 3.59, NIRF2019 Rank: 20]

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Undergraduate Programme

Curriculum and Syllabus for

B.Sc. Microbiology

(With effect from the Academic Year 2023-24)

JUNE 2023

Note: The Board of Studies in Microbiology (Common) designed the syllabus as per Common Model Syllabus provided by TANSCHÉ and based on Learning Outcome based Curriculum Framework (LOCF) as prescribed by the UGC.

TANSICHE REGULATIONS ON LEARNING OUTCOMES- BASED CURRICULUM FRAME WORK FOR UNDER GRADUATE EDUCATION	
Programme :	B.Sc. MICROBIOLOGY
Programme code :	22UGMB
Duration :	3 years [UG]
Programme Outcomes	<p>PO1: Disciplinary Knowledge: Acquire detailed knowledge and expertise in all the disciplines of the subject.</p> <p>PO2: Communication skills: Able to communicate scientific information, concepts, experiments and significance.</p> <p>PO3: Ethical value: Apply knowledge on ethical and legal based issues</p> <p>PO4: Analytical reasoning: Familiarize to collect, analyze and interpret scientific data.</p> <p>PO5: Contribution to society: Solve public issues concerned with public health and safety for the welfare of the society.</p> <p>PO6: Scientific reasoning Solve problems understanding the issues, and find solutions, in day to day life.</p> <p>PO7 : Employability skill Equip with skills, based on current trends and future expectations for career development and placements.</p> <p>PO8: Entrepreneurial skill Equip with skills and competency to become a successful entrepreneur.</p> <p>PO9: Research related skill Proficient skills and competence to make a prospective career in Research & Development.</p>

	<p>PO10: Life long learning Identify the need for skills necessary to be successful in future.</p> <p>PO11: Instrumentation skill Handle laboratory experiments following safety precautions and standards.</p>
Programme Specific Outcome	<p>PSO-1: Placement Prepare the students in all disciplines like agriculture, industry- medical, pharma, dairy, hotel, food and food processing, immunologicals, cosmetics, vermitechology and water treatment for effective and respectful placement.</p> <p>PSO-2:Entrepreneur To create effective entrepreneur by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.</p> <p>PSO-3:Research and Development Design and implement HR systems that comply with good laboratory practices, following ethical values, leading the organization towards growth and development. .</p> <p>PSO-4:Contribution to society To contribute to the development of society and produce microbiological products, by collaborating with stake holders, related to the betterment of environment and mankind at the national and global level.</p>

FIRST SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part –I	----	Language-I	L				3	6	25	75	100
Part –II	100L1Z	English Paper-I	L				3	6	25	75	100
Part -III	136C1A	Core-I: Fundamentals of Microbiology and Microbial Diversity	L				5	5	25	75	100
	136C11	Core-II: Practical I - Fundamentals Of Microbiology And Microbial Diversity			P		5	5	40	60	100
	136E1A	Elective-I: Basic And Clinical Biochemistry	L				3	4	25	75	100
Part –IV	136S1A	SEC-1 (NME): Social and Preventive Medicine *	L				2	2	25	75	100
	100L1L	Basic Tamil-I (Other Language Students) *									
	100L1M	Advanced Tamil-I (Other Language Students) *									
	136B1A	Foundation Course – Introduction to Microbial World	L				2	2	25	75	100
Total							23	30			

*** PART-IV: SEC-1 / Basic Tamil / Advanced Tamil (Any one)**

1. Students who have studied Tamil upto XII STD and also have taken Tamil in Part I shall take SEC-I.
2. Students who have **not** studied Tamil upto XII STD and have taken any Language other than Tamil in Part-I shall take **Basic Tamil** comprising of Two Courses (level will be at 6th Std.).
3. Students who have studied Tamil upto XII STD and have taken any Language other than Tamil in Part-I shall take **Advanced Tamil** comprising of Two Courses.

SECOND SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part –I	----	Language – II	L				3	6	25	75	100
Part –II	100L2Z	English Paper-II	L				3	6	25	75	100
Part -III	136C2A	Core-III: Microbial Physiology and Metabolism	L				5	5	25	75	100
	136C21	Core-IV: Practical-II Microbial Physiology and Metabolism			P		5	5	40	60	100
	136E2A	Elective-II: Bio Instrumentation	L				3	4	25	75	100
Part –IV	136S2A	SEC-II (NME): Nutrition & Health Hygiene *	L				2	2	25	75	100
	100L2L	Basic Tamil-II (Other Language Students) *									
	100L2M	Advanced Tamil-II (Other Language Students) *									
	136S2B	SEC-III: Sericulture	L				2	2	25	75	100
Total							23	30			

THIRD SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part –I	----	Language-III	L				3	6	25	75	100
Part –II	200L3Z	English Paper-III	L				3	6	25	75	100
Part -III	236C3A	Core-V: Molecular Biology and Microbial Genetics	L				5	5	25	75	100
	236C31	Core-VI: Practical-III – Molecular Biology and Microbial Genetics			P		5	5	40	60	100
	236E3A	Elective-III: Clinical Laboratory Technology	L				4	3	25	75	100
Part –IV	236S3A	SEC-IV: Organic Farming & Biofertiliser Technology (Entrepreneurial Skill)	L				1	1	25	75	100
	236S3B	SEC-V: Aquaculture	L				2	2	25	75	100
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Total							23	30			

FOURTH SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part –I	----	Language-IV	L				3	6	25	75	100
Part –II	200L4Z	English Paper-IV	L				3	6	25	75	100
Part -III	236C4A	Core-VII: Immunology and Immunotechnology	L				5	5	25	75	100
	236C41	Core-VIII: Practical-IV - Immunology and Immunotechnology			P		5	5	40	60	100
	236E4A	Elective-IV: Food Processing Technology	L				3	3	25	75	100
Part –IV	236S4A	SEC-VI: Vaccine Technology	L				2	2	25	75	100
	236S4B	SEC-VII: Apiculture	L				2	2	25	75	100
	236V4A	E.V.S.	L				2	1	25	75	100
Total							25	30			

FIFTH SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part -III	336C5A	Core-IX: Bacteriology And Mycology	L				4	5	25	75	100
	336C5B	Core-X: Virology And Parasitology	L				4	5	25	75	100
	336C51	Core-XI: Practical V- Medical Microbiology			P		4	5	40	60	100
	336C52	Core-XII: Group Project - Project with Viva-voce					4	5	40	60	100
	336E5A	Elective-V: Recombinant DNA Technology	L				3	4	25	75	100
	336E5B	Elective-VI: Biosafety& Bioethics	L				3	4	25	75	100
Part –IV	336V5A	Value Education					2	2	25	75	100
	336V5B	Internship/ Industrial visit/Field visit					2	--	25	75	100
Total							26	30			

SIXTH SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part -III	336C6A	Core-XIII: Environmental And Agriculture Microbiology	L				4	6	25	75	100
	336C6B	Core-XIV: Food, Dairy And Probiotic Microbiology	L				4	6	25	75	100
	336C61	Core-XV: Practical VI -Applied Microbiology			P		4	6	40	60	100
	336E6A	Elective-VII: Pharmaceutical Microbiology	L				3	5	25	75	100
	336E6B	Elective-VIII: Entrepreneurship And Bio-Business	L				3	5	25	75	100
Part -IV	336S6A	Professional competency skill: Microbial Quality Control And Testing	L				2	2	25	75	100
Part-V	336V6A	Extension Activity					1	--	--	--	---
Total							21	30			

Credit Distribution for UG MICROBIOLOGY

S.No	Part	Course Details	Credit
1	III	Core(15x4/5)	68
2		Elective Generic/ Discipline Specific Elective(8x3=24)	24
3	I& II	Language & English (Lang - 4x3=12 Eng - 4x3=12)	24
4	IV	NME(2x2)	4
5		EVS(1x2)	2
6		Value Education(1x2)	2
7		Extension Activity(1x1)	1
8		• Skill Enhancement Course [4 Courses x 2 credits =8 credits] SEC-4 – 1 Credit	9
		• Summer internship/ Industrial training (2x1=2 credits)	2
		• Foundation course	2
	• Professional Competency Skill	2	
			140