



Karmaveer Bhaurao Patil University, Satara
Faculty of Science and Technology

M. Sc. (Applied Microbiology)

Programme and Credit Structure as per NEP2020

Title: The degree shall be titled as ‘**Master of Science (Applied Microbiology)**’ under the Faculty of Science and Technology.

M.Sc. Sem. I & II: To be implemented from Academic Year 2024-25

M.Sc. Sem. III & IV: To be implemented from Academic Year 2025-26

Programme Outcomes for M. Sc. (Applied Microbiology)

PO. NO	Programme Outcomes After completing M.Sc. programme the students will be able to
PO-1	Understand the fundamentals and advancements of subject.
PO-2	Study, plan, and conduct experiments in the labs to validate the ideas principles, and theories acquired in the classrooms.
PO-3	Enhance scientific knowledge of the subject.
PO-4	Define their area of focus in academia, research, and development.
PO-5	Pursue careers in various fields such as science, engineering, education, banking, business, public services, etc. or become an entrepreneur with precision, analytical thinking, innovative ideas, clarity thought, expression, and systematic approach.

PSO. NO	After completing M.Sc. (Applied Microbiology) programme the students will be able to
PSO-1	Execute theoretical and practical knowledge in applied areas of Microbiology like Medical Microbiology, Industrial Microbiology, Virology, Marine Microbiology, Food Microbiology, etc. at work place.
PSO-2	Demonstrate expertise with a variety of conventional and advanced microbiology techniques.
PSO-3	Demonstrate proficiency in good laboratory practices in a microbiological laboratory to achieve placements in microbiological industries like food and beverages, dairy, pharmaceuticals etc.

PSO-4	Exhibit the skill of critical thinking and understanding to plan and conduct research projects and present/publish paper while emphasizing on academics and research ethics, scientific conduct and creating awareness about intellectual property rights and issues of plagiarism.
PSO-5	Take job positions in research institutes, microbiological organizations, and biotechnology industries as well as create self-employability.

Semester, Credit Framework NSQF Level and Exit Points

Sr. No	Semester	Year	Year	Credits	Level	Exit Points & Award
1	Sem. I & II	2024-25	1 Year	44	6	PG Diploma (Applied Microbiology)
2	Sem. III & IV	2025-26	2 Year	44	6.5	PG Degree (Applied Microbiology)
			Total	88		Master of Science (Applied Microbiology)

Credit Distribution

Sr. No	Components	1 Year Master Degree Programme			2 Year Master Degree Programme		
		Courses	Credits	%	Courses	Credits	%
	Mandatory Courses	06	24	54.55	12	48	54.55
	Elective Courses	02	04	9.09	04	08	9.09
	Mandatory Practical	02	04	9.09	04	08	9.09
	Elective Practical	02	04	9.09	03	06	6.82
	Research Methodology	01	04	9.09	01	04	4.55
	Research Project	01	04	9.09	02	10	11.36
	OJT	--	--	--	01	04	4.55
	Total (Mandatory)-(A)	09	32	72.73	19	70	79.55
	Elective	04	08	18.18	07	14	15.91
	RM	01	04	9.09	01	04	4.55
	Total - (B)	05	12	27.27	01	04	4.55
	Grand Total (A+B)	14	44	100	27	88	100

Duration:

- The program shall be a full-time program.

- The duration of program shall be One Year / Two years.
- Students will have to exit option with: - First Year (44 Credits) - PG Diploma
Second Year (88 Credits) - Master Degree

Number of Students: A batch shall consist of not more than 20 students. An additional 20% of seats will be allotted as per Karmaveer Bhaurao Patil University, Satara Norms.

Eligibility of the Students:

- Bachelor of Science with specialization in Microbiology.
- Any other eligibility prescribed by UGC, Government of Maharashtra, Karmaveer Bhaurao Patil University, Satara.

Medium of Instruction: The medium of instruction shall be in English.

Eligibility of the Core Faculty:

- **Assistant Professor:** Master of Science with specialization in Microbiology and NET/ SET/ Ph.D.
- **Associate Professor:** Master of Science in Microbiology with NET/SET/Ph.D.
- **Professor:** Master of Science in Microbiology with NET/SET/Ph.D.

Eligibility for Professor of Practice or Professional Trainer:

Any other eligibility as per the Guidelines and Regulations Passed by the Board of Concerned Studies, Academic Council of the College / University and Rules and Regulations of Karmaveer Bhaurao Patil University, Satara, Government of Maharashtra, and UGC norms.

Eligibility for Adjunct Professor of Practice or professional Trainer:

As per Eligibility prescribed by UGC

Scheme of Examination & Standard of Passing:(SEE and CCE)

End Semester Exam (ESE): 60 Marks (Min 24 Marks for Passing)

Continuous Comprehensive Evaluation (CCE): 40 Marks (Min 16 Marks for Passing)

Total Marks: 100 Marks for **DSC mandatory courses.**

End Semester Exam (ESE): 30 Marks (Min 12 Marks for Passing)

Continuous Comprehensive Evaluation (CCE): 20 Marks (Min 08 Marks for Passing)

Total Marks: 50 Marks for **DSE elective courses.**

Minimum 40% Marks Required for Passing and there is a separate head of passing as per the decision of the concerned Board of Studies or Competent Authority.

Evaluation of OJT and RP:

i. OJT: Total 100 marks for 4 credits

(Rubrics: Certificate= Max. 60 Marks, Report= 20 Marks, Viva= 20 Marks)

ii. RP: Total 100 marks for 4 credits

(Rubrics: Dissertation=60 Marks, Presentation & Viva=40 Marks)

M.Sc. (Applied Microbiology) Part -I				
Semester –I				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MAMiT 411	Microbial Biodiversity and Ecology	4
2	Mandatory	MAMiT 412	Recent trends in Virology	4
3	Mandatory	MAMiT 413	Microbial Biochemistry and Physiology	4
4	Electives	MAMiT 414	Essentials of genetics- EI or Advance Genetics- EII	2
5	RM	MAMiT 415	Research Methodology	4
6	Mandatory Lab	MAMiP 416	Microbiology Practical Course I	2
7	Electives Lab	MAMiP 417	Microbiology Practical Course II	2
			Total	22
Semester –II				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MAMiT 421	Industrial Microbiology	4
2	Mandatory	MAMiT 422	Microbial Metabolism	4
3	Mandatory	MAMiT 423	Analytical techniques	4
4	Electives	MAMiT 424	Quality management in Pharmaceutical Industry- EI or Pharmaceutical Microbiology- EII	2
5	RP	MAMiP 425	Research Project	4
6	Mandatory Lab	MAMiP 426	Microbiology Practical Course III	2
7	Electives Lab	MAMiP 427	Microbiology Practical Course IV	2
			Total	22

EXIT OPTION: PG Diploma with **44 Credits** after Three Year UG Degree.

M.Sc. (Applied Microbiology) Part -II				
Semester –III				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MAMiT 531	Microbial Ecology and Extremophiles	4
2	Mandatory	MAMiT 532	Molecular Biology	4
3	Mandatory	MAMiT 533	Gene technology and Genomics	4
4	Electives	MAMiT 534	Essentials of Cell Biology- EI or Food and dairy Microbiology- EII	2
5	Mandatory Lab	MAMiP 535	Microbiology Practical Course V	2
6	RP	MAMiP 536	Research Project	6
			Total	22
Semester –IV				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MAMiT 541	Essentials of Bioinformatics	4
2	Mandatory	MAMiT 542	Essentials of Immunology	4
3	Mandatory	MAMiT 543	Microbiological Quality Control and Assurance	4
4	Electives	MAMiT 544	Industrial Waste Management - EI or Medical Microbiology- EII	2
5	Mandatory Lab	MAMiP 545	Microbiology Practical Course VI	2
6	Electives Lab	MAMiP 546	Microbiology Practical Course VII	2
7	OJT	MAMiP 547	On Job Training	4
			Total	22

****** PG Degree with 88 credits after Three Year UG Degree.**

Chairman
BoS in Microbiology

Secretary
Academic Council

Chairman
Academic Council