



Karmaveer Bhaurao Patil University, Satara
Faculty of Science and Technology

B. Sc. (Microbiology)
Programme and Credit Structure as per NEP 2020

{Ref. Government of Maharashtra letter no. एनइपी.२०२२/प्र.क.०९/विशि-३शि का ना दिनांक: १३ मार्च २०२४}

The degree shall be titled as 'Bachelor of Science (Microbiology) under the faculty of Science and Technology

B. Sc. Sem. I & II from Academic Year 2024-25

B. Sc. Sem. III & IV from Academic Year 2025-26

B. Sc. Sem. V & VI from Academic Year 2026-27

B. Sc. Sem. VII&VIII from Academic Year 2027-28

Programme Outcomes for B. Sc. (Microbiology)

PO. No.	Programme Outcomes After completing B. Sc. Programme the students will be able to.....
PO-1	develop a scientific attitude among the students and to make the students open minded, critical, and curious.
PO-2	impart the knowledge of subject is the basic objective of this course.
PO-3	develop skills in practical work, experiments, and laboratory techniques.
PO-4	understand scientific terms, concepts, facts, phenomenon, and their relationships.
PO-5	enable the students to acquire knowledge of related subjects to understand nature and the environment for the benefit of human beings.
PO-6	enable the students to acquire knowledge and apply it for betterment of society.
PO-8	make the students skilled to get employment in various industries and government jobs.
PO-9	make the students aware of environment sustainable goals.
PO-10	empower students to apply their knowledge to start their own entrepreneurial ventures.
PSO. NO	Programme Specific Outcomes After completing B. Sc.(Microbiology) Programme the students will be able to.....
PSO-1	Describe the characteristics of different types of microorganisms and methods of their classification, methods of visualizing microorganisms, controlling growth of microorganisms, isolation and maintenance of bacterial cultures immunological concepts with reference to infection and immunity.
PSO-2	Explain applications of microorganisms in various field such as agriculture, environment, industries such as food and dairy industries, distilleries, pharmaceutical industries, immunology and medical microbiology etc.
PSO-3	to design and execute experiments related to Microbiology, immunology, molecular Biology, recombinant DNA technology, microbial genetics etc.
PSO-4	Attain skills needed in the Microbiology based industries through an internship.
PSO-5	Pursue higher studies in different branches of Microbiology like Medical Microbiology, Industrial Microbiology, Virology, Marine Microbiology, Food Microbiology, etc
PSO-6	Take up a suitable position in myriad sectors like academia, research and development, government sector or in industries like pharmaceuticals, food and beverages, bakery, winery, water testing and treatment, etc.
PSO-7	Present their research findings in research conglomerations like conferences and in research journals in the form of publications.
PSO-8	Apply subject knowledge to improvise processes like bioremediation, waste management and

clinical diagnostics and address social issues.

Semester, Credit Framework, NSQF Level and Exit Points

Sr. No.	Semester	Year	Year	Credits	Level	Exit Points & Award
1	Sem. I & II	2024-25	1Year	44	4.5	UG Certificate in Microbiology
2	Sem. III & IV	2025-26	2Year	88	5.0	UG Diploma in Microbiology
3	Sem. V & VI	2026-27	3Year	132	5.5	B. Sc. in Microbiology (UG Three Year Degree)
4	Sem. VII & VIII	2027-28	4Year	176	6.0	B. Sc. in Microbiology [Honors/Research] (UG Four Year Degree)

Credit Distribution

Sr. No.	Course	3 Year Degree Programme			4 Year Honors Degree Programme			4 Year Honors with Research Degree Programme		
		Courses (3 Yr)	Credits (3 Yr)	%	Courses (4 Yr)	Credits (4 Yr)	%	Courses (4 Yr)	Credits (4 Yr)	%
1	Major	26	52	39.39	34	80	45.45	32	72	40.91
2	Elective	04	08	6.06	08	16	9.09	08	16	9.09
3	IKS	02	04	3.03	02	04	2.27	02	04	2.27
4	VSC	04	08	6.06	04	08	4.55	04	08	4.55
5	FP	01	02	1.52	01	02	1.14	01	02	1.14
6	OJT	01	04	3.03	02	08	4.55	01	04	2.27
7	RP	00	00	0.00	00	00	00	02	12	6.82
8	SEC	03	06	4.55	03	06	3.41	03	06	3.41
9	CEP	01	02	1.52	01	02	1.14	01	02	1.14
Total (Major) (A)		42	86	65.15	55	126	71.59	54	126	71.59
1	Minor & RM	12	24	18.18	13	28	15.91	13	28	15.91
Total (Minor) (B)		12	24	18.18	12	28	15.91	13	28	15.91
1	OE	04	08	6.06	04	08	4.55	04	08	4.55
2	AEC	04	08	6.06	04	08	4.55	04	08	4.55
3	VEC	02	04	3.03	02	04	2.27	02	04	2.27
4	CC	01	02	1.52	01	02	1.14	01	02	1.14
Total (C)		11	22	16.67	11	22	12.50	11	22	12.50
Grand Total (A+B+C)		65	132	100	79	176	100	78	176	100

Duration:

- The program shall be a full-time program.
- The duration of program shall be three years for Bachelor of Science and four years for Bachelor of Science with Honors or Bachelor of Science with Research.
- Every year students will have exist option with:
- (1st Year: Certificate, 2nd Year: Diploma, 3rd Year: Degree, 4th Year: Honors / Research)
- These students are allowed to re-enter the degree program within three years and complete the degree program within the stipulated maximum period of Seven Years.

Eligibility: 12th Pass with Science, or equivalent.

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

Scheme of Examination & Standard of Passing (CCE and ESE):(As per the decision of the concern Board of Studies)

- 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
- Minimum 40% Marks Required for Passing and there is separate head of Passing for End Semester Examination (ESE) and Continuous Comprehensive Evaluation (CCE).
- A candidate who acquires 32 credits or more during semester – I & II shall be admitted to B. Sc. II (appear for semester – III & IV examination).
- However the candidate shall not be admitted to B.Sc. III (Semester - V) unless he/she passed in all the subjects at B.Sc. I (Semester - I & Semester - II) and acquire 32 credits or more during semester – III & IV.
- However the candidate shall not be admitted to B. Sc. IV (Semester - VII) unless he/she passed in all the subjects at B. Sc.II & III (Semester III, Semester IV, Semester - V & Semester - VI).
- However under the National Education Policy the rules extended by KBP University, time to time regarding ATKKT will be applicable.

Eligibility of the Core Faculty:

As per rules and regulations of Karmaveer Bhaurao Patil University, Satara and Govt. of Maharashtra.

Eligibility for Professor of Practice or Professional Trainer:

Any other eligibility as per the guidelines and regulations passed by concern board of studies, academic council of the autonomous college and rules & regulations of Karmaveer Bhaurao Patil University, Satara and Government of Maharashtra and UGC norms.



Karmaveer Bhaurao Patil University, Satara
Faculty of Science and Technology

B. Sc. (Microbiology) Part-I

Semester I				
Sr. No.	Components	Course code	Course	Credits
1	Course-I	BMiT 111	Introduction to Microbiology (P-I)	02
		BMiT 112	Techniques in Microbiology(P-II)	02
		BMiP 113	Lab-I based on Course BMiT 111 & 112	02
2	Course-II	-	DSC I, DSC II, DSP I	06
3	Course-III	-	DSC I, DSC II, DSP I	06
4	OE	BMiTOE-1	Digital marketing P-I	02
5	IKS	BMiTIKS-1	Introduction to Indian Knowledge System	02
Total				22
Semester II				
Sr. No.	Components	Course code	Course	Credits
1	Course-I	BMiT 121	Microbial Growth (P-III)	02
		BMiT 122	Biomolecules (P-IV)	02
		BMiP 123	Lab-II based on Course BMiT 121 & 122	02
2	Course-II	-	DSC I, DSC II, DSP I	06
3	Course-III	-	DSC II, DSC II, DSP I	06
4	OE	BMiTOE-1	Digital marketing P-II	02
5	VEC	BMiTVEC-1	Democracy, Election and Indian Constitution	02
Total				22
EXIT OPTION: Award of UG Certificate in Major with 44 credits & an additional 4 credits core NSQF Course/Internship OR Continue with Major & Minor.				

B. Sc. (Microbiology) Part-II

Semester III				
Sr. No.	Components	Course Code	Course	Credits
1	Major	BMiT 231	Microbial Physiology and Metabolism (P-V)	02
	Major	BMiT 232	Applied Microbiology (P-VI)	02
	Major Lab-III	BMiP 233	Practical Course III based on (P-V and P-VI)	02
2	Minor	-	DSC V, DSC VI, DSP III	06
3	OE	BMiTOE3	Digital Marketing (P-III)	02
4	VSC	BMiPVSC 1	Instrumentation in Microbiology-I	02
5	SEC	BMiPSEC 1	Basic Microbial Techniques -I	02
6	AEC	BMiTAE 1	English P-I	02
7	IKS	BMiTIKS 2	Indian Agriculture IKS P-II	02
Total				22

Semester IV				
Sr. No.	Components	Course Code	Course	Credits
1	Major	BMiT 241	Bacteriology and Genetics (P-VII)	02
	Major	BMiT 242	Basics in Medical Microbiology and Immunology (P-VIII)	02
	Major Lab IV	BMiP 243	Practical Course V and VI based on P-VII and P-VIII	02
2	Minor	-	DSC V, DSC VI, DSP III	06
3	OE	BMiTOE 4	Digital Marketing P-IV	02
4	VSC	BMiPVSC 2	Instrumentation in Microbiology-II	02
5	SEC	BMiPSEC 2	Basic Microbial Techniques -II	02
6	AEC	BMiTAEC 2	English P-II	02
7	VEC	BMiTVEC 2	Environmental Studies	02
Total				22
EXIT OPTION: Award of UG Diploma in Major and Minor with 88 Credits & an additional 4 credits core NSQF Course/ Internship OR Continue with Major & Minor				

B. Sc. (Microbiology) Part-III

Semester V				
Sr. No.	Components	Course Code	Course	Credits
1	Major	BMiT 351	Virology(P-IX)	02
2	Major	BMiT 352	Immunology (P-X)	02
3	Major	BMiT 353	Food & Industrial Microbiology (P-XI)	02
4	Electives (Any one out of two)	BMiT 354	Agricultural Microbiology -I(P-XIIE1)/ Medical Microbiology-I (P-XIIE2)	02
5	Major Lab	BMiP 355	Lab – V Based on (P-IX) & (P-X)	02
6	Elective Lab	BMiP 356	Lab – I Based on (P-XI) & (P-XIIE1)/(P-XIIE2)	02
7	VSC	BMiPVSC 3	Advanced Microbiology Skills Part-III (Analytical Techniques)	02
8	AEC	BMiTAEC 3	English P-III	02
9	OJT	BMiPOJT 1	On Job Training in Microbiology I	04
10	CEP	BMiTCEP 1	Community Engagement Programme in Microbiology	02
Total				22
Semester VI				
Sr.	Components	Course Code	Course	Credits
1	Major	BMiT 361	Genetics (P-XIII)	02
2	Major	BMiT 362	Microbial Biochemistry (P-XIV)	02
3	Major	BMiT 363	Environmental Microbiology (P-XV)	02
4	Electives (Any one out of two)	BMiT 364	Agricultural Microbiology-II (P-XVIE1)/ Medical Microbiology-II (P-XVIE2)	02
5	Major Lab	BMiP 365	Lab – VI Based on (P-XIII) & (P-XIV)	02
6	Elective Lab	BMiP 366	Lab – II Based on (P-XV) & (P-XVIE1)/(P-XVIE2)	02
7	VSC	BMiPVSC 4	Advanced Microbiology Skills Part-IV (Microscopy and Centrifugation)	02
8	SEC	BMiPSEC 3	AI in Microbiology	02
9	FP	BMiTFP 1	Field Project in Microbiology	02
10	CC	BMiTCC 1	Co-curricular Course in Microbiology	02

11	AEC	BMiTAEC 4	English P-IV	02
			Total	22
EXIT OPTION: Award of UG Degree in Major with 132 credits OR Continue with Major & Minor.				

B. Sc. (Microbiology) Part-IV Honors Degree

Semester VII				
Sr. No.	Components	Course Code	Course	Credits
1	Major	BMiT 471	Microbial Biodiversity and Ecology (P-XVII)	04
2	Major	BMiT 472	Recent Trends in Virology (P-XVIII)	04
3	Major	BMiT 473	Microbial Biochemistry and Physiology (P-XIX)	04
4	Electives (Any one out of two)	BMiT 474	Essentials of Genetics (P-XXE1)/ Advance Genetics (P-XXE2)	02
5	Major Lab	BMiP 475	Lab – VII based on (P-XVII) & (P-XVIII)	02
6	Elective Lab	BMiP 476	Lab – III based on (P-XIX) (P-XXE1)(P-XXE2)	02
7	Minor	BMiT 477	Research Methodology	04
			Total	22
Semester VIII				
Sr.	Components	Course Code	Course	Credits
1	Major	BMiT 481	Industrial Microbiology (P-XXI)	04
2	Major	BMiT 482	Microbial Metabolism (P-XXII)	04
3	Major	BMiT 483	Analytical Techniques (P-XXIII)	04
4	Electives (Any one of two)	BMiT 484	Microbiology (P-XXIVE1)/ Microbiology (P-XXIVE2)	02
5	Major Lab	BMiP 485	Lab – VIII based on (P-XXI) &(P-XXII)	02
6	Elective Lab	BMiP 486	Lab – IV based on (P-XXIII),(P-XXIVE1) & (P-XXIVE2)	02
7	OJT	BMiPOJT 2	On Job Training in Microbiology II	04
			Total	22
Award of Four year UG Honors Degree in Major and Minor with 176 credits.				

B. Sc. (Microbiology) Part-IV Honors with Research Degree

Semester VII				
Sr. No.	Components	Course Code	Course	Credits
1	Major	BMiT 471	Microbial Biodiversity and Ecology (P-XVII)	04
2	Major	BMiT 478	Recent Trends in Virology (P-XVIII)	04
3	Electives	BMiT 474	Essentials of Genetics (P-XIXE1)/ Advance Genetics (P-XIXE2)	04
4	Major Lab	BMiP 475	Lab – VII based on P-XVII, P-XVIII,P-XX E1& E2	02
5	Minor	BMiT 477	Research Methodology	04
6	RP	BMiPRP 1	Research Project in Microbiology I	04
			Total	22
Semester VIII				
Sr. No.	Components	Course Code	Course	Credits
1	Major	BMiT 481	Industrial Microbiology (P-XX)	04

2	Major	BMiT 482	Analytical Techniques (P-XXI)	04
3	Electives	BMiT 484	Quality Management in Pharmaceutical industry(P-XXIIE1)/ Pharmaceutical Microbiology (P-XXIIE2)	04
4	Major Lab	BMiP 485	Lab – VIII based on P-XX, P-XXI,P-XXII E1 & E2	02
5	RP	BMiPRP 2	Research Project in Microbiology II	08
			Total	22
Award of Four year UG Honors Degree in Major and Minor with 176 credits.				

Chairman
BoS in Microbiology

Secretary
Academic Council

Chairman
Academic Council