

1. M.Sc. IN MICROBIOLOGY
IN THE SCHOOL OF LIFE SCIENCES (AUTONOMOUS)

1. ELIGIBILITY CRITERIA:

The candidate should have passed a Bachelor Degree under 10+2+3 pattern of education in Science with any of the subjects i.e. Microbiology, Biochemistry, Biotechnology, Genetics, Molecular Biology, Botany or Zoology or M.B.B.S./B.D.S/B.Sc (Ag)/B.V.Sc from any Institute/ University recognized by the Sambalpur University/ University Grant Commission, New Delhi. Any Science graduate with biology as a subject at 10+2 level are also eligible for the M.Sc. Microbiology Course.

2. SELECTION CRITERIA:

As per general selection criteria of Sambalpur University

Formula for calculating career mark

Category I (Science graduates)

H.S.C.E.	1st Div.-6	2 nd Div.-4.5	3 rd Div./Pass-3
+2	1st Div.-9	2 nd Div.-7	3 rd Div./Pass-5
+3 (Hons)	1st Div.-13	2 nd Div.-10	Distn.-2
+3 (Pass)	7		Distn.-2

Category II (Graduates in Medical and other Professional courses)

H.S.C.E.	1st Div.-6	2 nd Div.-4.5	3 rd Div./Pass-3
+2	1st Div.-9	2 nd Div.-7	3 rd Div./Pass-5

Graduation: (Marks Secured in Percentage)

"Total Marks Secured/Maximum Marks X 100"

75% and above= 15

60% and above but less than 75% = 12

45% and above but less than 60% = 10

All other eligible candidates = 08

3. DURATION OF THE COURSE: 2 YEARS

4. NUMBER OF SEATS: 16 (Sixteen)

5. FEE STRUCTURE:

(a) Course Fee:

Rs. 25,000/- per semester (Besides the course fee, a candidate admitted to the programme shall pay other fees as prescribed in the prospectus at Clause. 12).

(b)Infrastructure Development Fee: **Rs. 5000/- per semester**

6. COURSE STRUCTURE:

Course	Course Title	Credit hours	Marks
SEMESTER- I			
MB-411 (A or B)	(A) Fundamentals of Physical Sciences (B) Fundamentals of Biological Sciences	3 CH	50
MB -412	Biochemistry	3 CH	50
MB -413	Biophysics and Biophysical Chemistry	3 CH	50
MB -414	Bacteriology	3 CH	50
MB -415	Molecular Biology	3 CH	50
MB -416	Instrumentation and Techniques	3 CH	50
MB -417	Practical (Biochemistry and Instrumentation)	2 CH	50
MB -418	Practical (Bacteriology)	2 CH	50
SEMESTER- II			
MB -421	Virology	3 CH	50
MB -422	Cell Biology	3 CH	50
MB -423	Immunology	3 CH	50
MB -424	Genetics	3 CH	50
MB -425	Biostatistics	3 CH	50
MB -426	Microbial Diversity and Extremophile	3 CH	50
MB -427	Practical (Cell Biology and Biostatistics)	2 CH	50
MB -428	Practical (Genetics, Immunology and Virology)	2 CH	50
SEMESTER- III			
MB -531	Microbial Physiology	3 CH	50
MB -532	Microbial Genetics	3 CH	50
MB -533	Food Microbiology	3 CH	50
MB -534	Applied and Industrial Microbiology	3 CH	50
MB -535	Fundamentals of Microbial Infection and Diseases	3 CH	50
MB -536	Mycology and Phycology	3 CH	50
MB -537	Practical Related to MB-531, MB -532 and MB -533	2 CH	50
MB -538	Practical related to MB -534 and MB -535	2 CH	50
MB -539	Industrial Visit and Report Submission / Term paper	2 CH	50
SEMESTER- IV			
MB -541	Environmental Microbiology	3 CH	50
MB -542	Medical and Diagnostic Microbiology	3 CH	50
MB -543	Microbial Technology	3 CH	50
MB -544	Microbial Genomics and Proteomics	3 CH	50
MB -545	Seminar	2 CH	50
MB -546	Project Work and Viva-voce	(6+2) CH	200
Total Course Credit		90 CH	1700

7. COURSE FACULTY:

(A) Core Faculty:

Sl. No.	Name of The Teacher	Area of Specialization
1.	Prof. S. P. Mishra	Forest Ecology, Soil Microbiology and Plant Tissue Culture
2.	Dr. (Mrs) B. Nayak	Algal Biotechnology, Biofertiliser, Biochemistry, Cyano bacterial Technology
3.	Dr. E. Kariali	Plant Stress Physiology, Molecular Biology and Agricultural Biotechnology
4.	Dr. R. K. Behera	Biochemistry, Immunology and Plant Biotechnology
5.	Dr. (Mrs.) S. Sahoo	Soil Biotechnology and Microbial Ecology
6.	Dr. J. Ratha	Animal Cell Culture & Immunotechnology
7.	Dr. A Patnaik	Environmental Biology & Vermitechnology
8.	Dr. N.J. Ekka	Forest Ecology and Microbial Technology
9.	Dr. S. N. Pradhan	Biochemistry & Environmental Biology

(B) Guest Faculty:

Guest Faculties from other Universities, Research Institutes across India having expertise in different fields of Microbiology are invited to impart quality teaching through innovative methodology.

8. OTHER SPECIAL FEATURES OF THE COURSE AND THE HOST DEPARTMENT:

(a) Special Feature of the Course:

M.Sc. Microbiology is a two year full time program under self financing mode leading to award of Masters of Sciences (M.Sc.) degree in Microbiology. The program includes four semesters of course work including a project work during which students are provided training to conduct research. The students are offered basic and advanced level courses in Microbial diversity, Microbial physiology, Virology, Immunology, Environmental microbiology, Microbial Infection and Diseases, Molecular Biology, Microbial genetics, Biostatistics, Advanced Instrumentation Techniques, Microbial Genomics and Proteomics, Industrial and food microbiology etc. Moreover, the course content of NET examination has been given due importance. As a part of their curriculum, students deliver seminars on various scientific topics. Second year students work on various projects under the supervision of different faculties and submit a project dissertation at the end of their training.

The two year post graduate programme in M.Sc. Microbiology has a broader scope enabling the candidates to fetch wide variety of career opportunities available in the field of Microbiology in India and abroad. The School of Life Sciences, one of the premier autonomous institutes of the country imparting quality education in advanced biology, is hosting the course by utilizing its human resources and infrastructural facilities. Applications of Microbiology are extensively seen in food processing, agricultural and pharmaceutical industries. Ample job opportunities are available in the field of Research and Development, Government and Private Hospitals, Research Organisations, Food, Beverage, Pharmaceutical and Chemical Industries etc. Besides, candidates after completion of M. Sc degree in Microbiology can find a bright career in the research field as a Scientist or Microbiologist.

(b) About the host Department:

Established in the year 1969 School of Life Sciences of Sambalpur University served as a interdisciplinary school where physical sciences has been conglomerated with biology at the level of higher learning. We believe life sciences as a multi-disciplinary branch of science and want to provide our students with the basics to cope up with the demands of modern research and teaching. Emphasis is given on holistic approach where students are exposed to advanced courses such as Microbiology, Biochemistry, Molecular Biology, Bioinstrumentation, Immunology, Biostatistics, Biophysics, Ecology, Physiology, Bioinformatics, Computer applications and many advanced branches of plant and animal sciences.

The Department also has a rich culture of research and students are actively engaged in different in-house projects as well as they participate in summer training courses in research institutes and industries. Further students are encouraged to present research papers in different national and international seminars and workshops. The department also organizes seminars by renowned scientist from different institute in India to provide opportunity to students to listen to research work as well interact with them. The faculty members are actively engaged in research with support from different national funding agencies and publishing their research papers in journals of international repute. The School is also known for meritorious students who excel in qualifying national level competitive exams like NET, GATE, ICMR, ICAR, DBT etc in large numbers.

(c) Infrastructure facilities available in the department:

The department has state of the art laboratories for (i) Microbiology and Immunology (ii) Molecular Biology and Genetic Engineering (iii) Plant Biotechnology and Genetic Transformation (iv) Biochemistry (v) Cytogenetics (vi) Ecology and Environmental biotechnology and (vii) Central Bioinstrumentation facilities.

(d) Major Equipments available in the department:

All the labs are well equipped with advanced instruments and facilities. In addition to the Central Instrumentation Facility, the Department is equipped with sophisticated instruments viz. PCR Machine, Gradient Thermal cycler, Gel Documentation System, UV-Vis spectrophotometer, ELISA reader, Blotting apparatus, Vertical and Submarine Electrophoresis apparatus, Lyophilizer, Ultracentrifuge, Millipore Water Purification Systems, Phase contrast Microscope, Fluorescence Microscope, High Performance Liquid Chromatography, Gas Chromatography and Atomic Absorption Spectrophotometer, Infrared gas analyzer, Photosynthetic Efficiency Analyser. Further, this facility will be enriched with Real Time PCR, CO₂ Incubator, Animal Tissue Culture Lab, NET house through DST-FIST Programme .

