

DEPARTMENT OF MICROBIOLOGY & BIOTECHNOLOGY

UNIVERSITY SCHOOL OF SCIENCES, GUJARAT UNIVERSITY,

AHMEDABAD 380 009.

M.Phil. BIOTECHNOLOGY SYLLABUS

From June 2017

- There shall be four theory papers and one dissertation.
- Three theory papers shall carry hundred marks (70+30).
- The candidate is required to submit research papers to the faculty for the third paper BT-603.
- Two typed/computerised bound copies of the dissertation shall be submitted to the University during the final M.Phil.
- Each theory paper is divided into four units. Each unit will have equal weightage while setting question paper. Question or its sub question including the options will be set from the same unit.
- There shall be one study tour / field work during the academic term. It will pertain to different biotechnology / environmental industries / research institute / various ecosystems even outside Gujarat State. The study tour is highly essential for studying pertains to industry.
- The fourth paper shall comprise of bound copy of dissertation thesis (200 marks).

Paper Number	Title	Course Credits
BT-601	Research Methodology in Biotechnology	4
BT-602	Review Articles in Biotechnology	4
BT-603	Research Papers in Biotechnology	4
BT-604	Academic Training in Biotechnology	4
BT-605	Dissertation in Biotechnology	8

M.Phil Syllabus

Paper BT:601 Research Methodology In Biotechnology

Marks :70+30

Unit 1

1. Introduction of Project Writing and Computer Skills
2. Research Problem
3. Research Design and application of biostatistics
4. Report Writing and Research paper writing
5. Computer in Research

Unit 2

1. Chromatography-HPCL,TLC,GLC
2. Spectroscopy and spectrometry
3. Microscopic techniques
4. Radiolabelling techniques
5. Electrochemical Methods

Unit 3

1. Data representation in Biostatistics.
2. Measures of Central Tendency and Dispersion.
3. Regression and Correlation.
4. Introduction to Bioinformatics
5. Databases and bioinformatics tools.
6. Phylogenetic analysis

Unit 4

1. Culture dependent and culture independent approaches for studying microbial diversity in environment.

2. Isolation and Purification of microbial community nucleic acids from environment samples
3. Genome organization in prokaryotes.
4. Isolation and purification of Proteins
5. In vitro technique for gene manipulation

M.Phil Syllabus

Paper BT :602 REVIEW ARTICLES IN BIOTECHNOLOGY

Marks:70+300

UNIT 1

1. Metagenomics of extreme environment
2. Information science for ecological studies
3. Metabolomic analysis in food science
4. Plant tissue culture and its applications
5. Transgenic animal production

UNIT 2

1. Advances in industrial microbial enzymes
2. Secondary Metabolites from bacteria
3. Enzymes from Halophiles
4. Cellulose degrading Enzymes.
5. Applications of microbial consortia

UNIT 3

1. Production of human therapeutic agents
2. Production of Biofuels and chemicals from bacteria.
3. Cloning of medicinal plants
4. Metabolic potential of endophytic bacteria
5. Applications of rDNA

UNIT 4

1. Nanoparticles for plant protection
2. Gold nanoparticles for cancer therapy

3. Plants as bioreactors
4. Tools and applications in synthetic biology
5. Antioxidant potential of medicinal plants

M Phil Syllabus

Marks :70+30

PAPER BT: 603 RESEARCH PAPERS IN BIOTECHNOLOGY

There shall be 20 research papers to be studied in this paper

PAPER BT :604 Academic Training in Biotechnology

Practicals/ Projects/Field-Industrial visit/Seminar/ Department
teaching/Review Writing/etc. (INTERNAL)

Marks:100