Department of Microbiology
Course Outcomes (PG)

M.Sc. Semester I (Paper I): Microbial Diversity and Evolution.
Course code: - PSMB101 Credits: - **4**
After completion of this course, the students will be able to –
CO1: Understand the microbial evolution and systematics.
CO2: Understand the methods of determining evolutionary relationships.
CO3: Understand the Derivation of Microbial phylogeny.
CO4: Understand the microbial diversity of Archea.

M.Sc. Semester – I (Paper II): Microbial Physiology and metabolism.
Course code: PSMB102: Credits: 4
After completion of this course, the students will be able to –
CO1: Understand the concept of bioenergetics and metabolism.
CO2: Understand the Biosynthesis and lipid metabolism.
CO3: Understand the concept of photosynthesis.
CO4: Understand the Protein and nucleic acid metabolism.
CO5: Understand the Nitrogen metabolism.

M.Sc. Semester I (Paper III): Enzymology and Techniques.
Course code: - PSMB103 Credits: - **4**
After completion of this course, the students will be able to –
CO1: Understand the Enzymes Kinetics
CO2: Understand the Catalytic mechanism.
CO3: Understand the Regulation of enzyme activity
CO4: Understand the enzyme isolation and purification

M.Sc. Semester – I (Paper IV): Commercial Microbiology
Course code: PSMB104: Credits: 4
After completion of this course, the students will be able to –
CO1: Understand the petroleum Microbiology
CO2: Understand the cosmetic Microbiology and space Microbiology
CO3: Understand the Textile and paper Microbiology
CO4: Understand the plastic and rubber Microbiology

Practical –I: Semester I:
After completion of this course the students will be able to –
CO1: Understand the enzyme activity of lipase, urease.
CO2: Understand the amylase activity.
CO3: Understand the protein estimation.
CO4: Understand the purification of enzyme.

Practical –II: Semester I:
After completion of this course the students will be able to –
CO1: Understand the Antagonism.
CO2: Understand the bioflim development on metal strips.
CO3: Understand the role of nitrogen fixing bacteria
CO4: Understand the activity of agar diffusion plate test.

M.Sc. Semester II (Paper I): Advance technique in Microbiology
Course code: - PSMB105 Credits: - **4**
After completion of this course, the students will be able to –
CO1: Understand the viscosity, CD/ORD.
CO2: Understand the electrophoresis..
CO3: Understand the Microscopical technique.
CO4: Understand the blotting techniques
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M.Sc. Semester – II (Paper II): Membrane structure and signal transduction
Course code: PSMB106: Credits: 4
After completion of this course, the students will be able to –
CO1: Understand the Structure and organization of membranes.
CO2: Understand the membrane transport.
CO3: Understand the signal transduction.
CO4: Understand the bacterial signal transduction.

M.Sc. Semester II (Paper III): Microbial Methods for Environment Management
Course code: - PSMB107 Credits: - **4**
After completion of this course, the students will be able to –
CO1: Understand the eutrophication.
CO2: Understand the biotransformation and bioleaching.
CO3: Understand the pollution management
CO4: Understand the global environment problems.

M.Sc. Semester – II (Paper IV): Nanomicrobiology
Course code: PSMB108: Credits: 4
After completion of this course, the students will be able to –
CO1: Understand the microbial nanotechnology
CO2: Understand the DNA nano-tubes
CO3: Understand the nano-particle synthesis
CO4: Understand the methods for preparation for nanoparticles

Practical –I: Semester II:
After completion of this course the students will be able to –
CO1: Understand the agarose gel electrophoresis.
CO2: Understand the thin layer chromatography
CO3: Understand the Ion exchange chromatography
CO4: Understand the gel filtration chromatography

Practical -II: Semester II:
After completion of this course the students will be able to –
CO1: Understand the yeast isolation method.
CO2: Understand the mercury resistant bacteria.
CO3: Understand the isolation of Actinomyctes.
CO4: Understand the bioleaching process.

M.Sc. Semester III (Paper I): Genetics and Molecular Biology.
Course code: - PSMB109 Credits: - **4**
After completion of this course, the students will be able to –
CO1: Understand the replication, repair.
CO2: Understand the gene expression.
CO3: Understand the gene regulation.
CO4: Understand the gene recombination.

M.Sc. Semester – III (Paper II):Recombinant DNA technology.
Course code: PSMB110: Credits: 4
After completion of this course, the students will be able to –
CO1: Understand the enzymes in genetic recombination.
CO2: Understand the cloning vectors
CO3: Understand the specialized cloning strategies.
CO4: Understand the PCR and DNA sequencing method.

M.Sc. Semester III (Paper III): Bioprocess Technology
Course code: - PSMB111 Credits: - **4**
After completion of this course, the students will be able to –
CO1: Understand the general principles of fermentation
CO2: Understand the downstream processing
CO3: Understand the industrial fermentation
CO4: Understand the industrial production of enzymes.

M.Sc. Semester – III (Paper IV): Food Microbiology and Food Safety
Course code: PSMB112: Credits: 4
After completion of this course, the students will be able to –
CO1: Understand the food spoilage
CO2: Understand the food safety and quality assurance
CO3: Understand the food processing and preservation.
CO4: Understand the food fermentation

Practical –I: Semester III:
After completion of this course the students will be able to –
CO1: Understand the isolation of genomic DNA from Bacteria
CO2: Understand the isolation of plasmid DNA
CO3: Understand the Agarose gel electrophoresis
CO4: Understand SDS-PAGE electrophoresis.

Practical –II: Semester III:
After completion of this course the students will be able to –
CO1: Understand the production of microbial products in abioreactor
CO2: Understand the microbial kinetics
CO3: Understand the TDP and TDT
CO4: Understand the production and assay of Penicillin.

M.Sc. Semester IV (Paper I): Medical Microbiology and Parasitology
Course code: - PSMB113 Credits: - **4**
After completion of this course, the students will be able to –
CO1: Understand the basic medical microbiology
CO2: Understand the clinical microbiology
CO3: Understand the medical microbiology
CO4: Understand the parasitology

M.Sc. Semester – IV (Paper II): Virology
Course code: PSMB114: Credits: 4
After completion of this course, the students will be able to –
CO1: Understand the basic virology
CO2: Understand the cultivation and assay of viruses.
CO3: Understand the bacterial and plant viruses
CO4: Understand the animal viruses.

M.Sc. Semester IV (Paper III): Immunology
Course code: - PSMB115 Credits: - **4**
After completion of this course, the students will be able to –
CO1: Understand the humoral and cell mediated immunity
CO2: Understand the antigens, antibodies
CO3: Understand the hypersensitivity and autoimmunity
CO4: Understand the tumour and transplant immunology

M.Sc. Semester – IV (Paper IV): Biostatistics and Bioinformatics
Course code: PSMB116: Credits: 4
After completion of this course, the students will be able to –
CO1: Understand the descriptive statistics, probability.
CO2: Understand the analysis of variance
CO3: Understand the biological sequencing
CO4: Understand the proteomics and genomics

Practical –I: Semester IV:
After completion of this course the students will be able to –
CO1: Understand the methods of isolation of *S.auerus* from pus, wound sample.
CO2: Understand the RIA test
CO3: Understand the ELISA test
CO4: Understand the RA test

Project Work/Seminar
After completion of this course the students will be
CO1: understand the research methodology and techniques of experimental work.
CO2: understand the application of computer during the Project work.