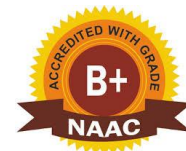




AAER's

Asian College of Science and Commerce

Affiliated to SPPU and Approved by Govt of Maharashtra Accredited by NAAC with B+ Grade



Course Outcomes

The examination format consists of continuous assessment, which accounts for 30 marks for internal evaluation and 70 marks for external evaluation.

Class: M.Sc. I Microbiology (Semester-I)

Sr. No.	Course Name	Course Outcomes
1.	MB501 Microbial Systematics	Study species concepts, classification systems (5-Kingdom, 3-Domain), and approaches like phenetic, phylogenetic, and polyphasic.
		Explore microbial diversity across various facets, including morphological, ecological, and evolutionary aspects, as well as diversity measurement indices.
		Learn about unculturable bacteria, culture-independent molecular methods, and the theory and molecular aspects of evolution, including mutation, selection, and co-evolution.
2.	MB502 Quantitative Biology	Understand fundamental concepts in data types (qualitative, quantitative, discrete, continuous), measurement scales (nominal, ordinal, interval, ratio), and the importance of variability and uncertainty in measurements.
		Learn to calculate and interpret mean, median, mode, and measures of dispersion like mean deviation, standard deviation, and variance.
		Master data visualization through tables and graphs (histogram, bar, pie, line) and apply simple linear regression and correlation for basic analysis without significance testing.
3.	MB503 Biochemistry and Metabolism	Study structural features of amino acids, peptide bonds, protein structure (primary to quaternary), and methods for determining the primary structure, focusing on interactions and conformational properties.
		Learn chromatography techniques (gel filtration, ion exchange, affinity), electrophoresis methods (PAGE), PCR and its variations, and DNA/RNA sequencing techniques, including classical and next-generation sequencing.
		Understand developmental processes, including model systems, body axis patterning, morphogenesis in plants (Arabidopsis), and cellular organization, with a focus on protein trafficking, cell cycle regulation, and apoptosis.
4.	MBTE11 Fungal Systematics and Extremophiles	Understand the enrichment, isolation, classification, properties, and applications of various extremophiles, including thermophiles, psychrophiles, halophiles, acidophiles, and methanogens.
		Study the adaptation mechanisms that allow extremophiles to thrive in extreme environmental conditions.



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Class: M.Sc. I Microbiology (Semester-II)

Sr. No.	Course Name	Course Outcomes
1.	MB601 Instrumentation and Molecular Biophysics	Master chromatographic and electrophoresis techniques for biomolecule analysis.
		Understand UV/Visible, fluorescence, IR, and mass spectroscopy for structural and molecular analysis.
		Learn NMR, X-ray crystallography, radioisotope applications, and confocal microscopy for advanced molecular studies.
2	MB602 Molecular Biology	Understand RNA processing (mRNA splicing, tRNA/rRNA processing, RNAi) and molecular techniques for genetic analysis (e.g., knockout mice, CHIP).
		Learn about restriction enzymes, ligases, cloning vectors, hybridization techniques, and gene expression systems.
		Gain knowledge of genome projects, gene annotation, and molecular diagnostics, including RNA signatures for diseases and antibiotic resistance.
3	MB603 Enzymology, Bioenergetics and Metabolism	Understand enzyme purification, reversible inhibition kinetics, allosteric regulation, and enzyme catalysis models.
		Learn the principles of thermodynamics, Gibbs free energy, coupled reactions, high-energy compounds, and metabolic energy charge.
		Gain knowledge of lipid structure, synthesis, and degradation; carbohydrate chemistry, glycolysis, gluconeogenesis, and metabolic regulation.
4	MBTE23 Nitrogen Metabolism, respiration and Photosynthesis	Understand biological nitrogen fixation, nitrogenase regulation, ammonia assimilation, and the biosynthesis of amino acids, purines, and pyrimidines.
		Learn the biochemistry of anaerobic respiration, sulfur and nitrate as electron acceptors, and methanogenesis.
		Grasp the organization of photosystem I & II, electron flow, Z scheme, and regulation of photosynthesis in C3, C4, and CAM plants.

