

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

Chhatrapati Sambhajnagar, Maharashtra | NAAC Re-accredited Grade 'A'

Faculty of Science & Technology — POs & Course Outcomes (COs)

Aligned with National Education Policy (NEP 2020) | B.Sc. / M.Sc. Outcome Based Education

PROGRAM OUTCOMES (POS) — FACULTY OF SCIENCE

PO1: Scientific Inquiry & Knowledge

Apply core principles of physical, chemical, mathematical, and biological sciences to solve complex scientific and technical problems.

PO2: Experimental & Laboratory Skills

Design, execute, analyze, and interpret laboratory experiments using modern instruments and quantitative analytical methods safely.

PO3: Environmental & Social Ethics

Understand biodiversity conservation, ecological balance, sustainable green technology, and scientific ethics in research.

PO4: Problem Solving & Innovation

Formulate hypotheses, utilize mathematical modeling, and apply computational tools to drive technological innovation.

COURSE OUTCOMES (COS) — PHYSICAL & CHEMICAL SCIENCES

1. Department of Chemistry

Course Code	Course Title	Course Outcomes (COs) - On completion, students will be able to:
CHE-101 (DSC)	Inorganic & Organic Chemistry	Understand chemical bonding, periodic trends, reaction mechanisms (SN1, SN2), stereochemistry, and aliphatic hydrocarbon synthesis.
CHE-102 (DSC)	Physical & Analytical Chemistry	Apply chemical thermodynamics, gaseous states, phase equilibrium, and conductimetric/potentiometric titration techniques.
CHE-103 (P)	Chemistry Practical Lab - I	Perform qualitative organic analysis, volumetric estimations, titration preparations, and record experimental accuracy.

2. Department of Physics

Course Code	Course Title	Course Outcomes (COs) - On completion, students will be able to:
PHY-101 (DSC)	Mechanics & Properties of Matter	Analyze Newton's laws, rotational dynamics, elasticity, surface tension, fluid viscosity, and central force motion.
PHY-102 (DSC)	Electricity, Magnetism & Electronics	Apply Gauss's Law, Maxwell's equations, AC circuits, semiconductor diodes, transistors, and logic gate operational principles.
PHY-103 (P)	Physics Practical Lab - I	Measure physical constants (Young's modulus, moment of inertia), calibrate CRO, and verify circuit theorems experimentally.

COURSE OUTCOMES (COS) — MATHEMATICS & LIFE SCIENCES

3. Department of Mathematics

Course Code	Course Title	Course Outcomes (COs) - On completion, students will be able to:
MAT-101 (DSC)	Differential Calculus & Trigonometry	Apply Successive Differentiation, Leibnitz theorem, Mean Value Theorems, Taylor's expansion, and De Moivre's theorem.
MAT-102 (DSC)	Differential Equations & Algebra	Solve first order first degree differential equations, linear equations with constant coefficients, matrix ranks, and eigen values.
MAT-201 (DSE)	Real Analysis & Vector Calculus	Analyze sequence and series convergence, Riemann integration, gradient, divergence, curl, and Green/Stokes theorems.

4. Department of Botany

Course Code	Course Title	Course Outcomes (COs) - On completion, students will be able to:
BOT-101 (DSC)	Diversity of Microbes, Algae & Fungi	Identify morphology, reproduction, and economic importance of Algae, Fungi, Lichens, Bacteria, and Viruses.
BOT-102 (DSC)	Plant Anatomy & Embryology	Examine tissue systems (xylem/phloem), secondary growth, microsporogenesis, megasporogenesis, and seed development.
BOT-103 (P)	Botany Practical Lab - I	Perform section cutting, staining, botanical slide preparation, herbaria techniques, and plant specimen identification.

5. Department of Zoology

Course Code	Course Title	Course Outcomes (COs) - On completion, students will be able to:
ZOO-101 (DSC)	Non-Chordates & Animal Diversity	Classify invertebrate phyla (Protozoa to Echinodermata); understand structural organization and functional adaptations.
ZOO-102 (DSC)	Cell Biology & Evolutionary Genetics	Comprehend organelle functions, cell division (Mitosis/Meiosis), Mendelian genetics, DNA structure, and Darwinian evolution.
ZOO-103 (P)	Zoology Practical Lab - I	Conduct microscopic identification of histological slides, osteology study, blood grouping, and physiological experiments.

Laboratory Safety & Credit Distribution: Science majors mandate 50% Theory (4 Credits) + 50% Practical Hands-on Lab work (2 Credits/sem).

