

## Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, CHHATRAPATI SAMBHAJINAGAR. **DEPARTMENT OF BOTANY**

## M.Sc. Botany Program Outcome Matrix

Required Courses		M.Sc. Botany Course Program Outcomes Semester: I											
and Course Outcomes	Foundational Knowledge	Research and Analytical Skills	Problem-Solving and Critical Thinking	Practical and Technical Proficiency	Communication Skills	Ethical and Social Responsibility	Teamwork and Collaboration	Entrepreneurship and Innovation	Lifelong Learning	Global and Indian Perspectives	Application of Botany	Career Readiness	
Semester: I													
SAD265001T													
Cell and Molecular Biology													
CO1: Comprehensive Understanding of	✓	✓		✓				✓	<b>✓</b>		✓		
Cell Structure and Membrane Dynamics													
CO2: In-Depth Knowledge of Cellular	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	
<b>Organelles and Their Functions</b>													
CO3: Proficiency in Cell Cycle	✓		✓		✓	<b>✓</b>		✓	✓	✓		✓	
Regulation and Cytoskeletal Functions													
SAD265011T													
Biology & Diversity of Algae													
and Bryophytes													
CO1: Comprehensive Knowledge of	✓					✓							
Algal Diversity and Classification													
CO2: In-Depth Understanding of Algal	✓	✓	<b>√</b>	✓	✓		✓	✓	✓	✓	✓	✓	
Structure, Reproduction, and Economic													
Importance													
CO3: Proficiency in Bryophyte Biology,	✓	✓	✓	✓	<b>✓</b>		✓	<b>✓</b>	<b>✓</b>	✓	✓	✓	
Morphology, and Bioprospecting													
SAD265021T													
Taxonomy of Angiosperms													
CO1: Mastery of Angiosperm	✓	✓	✓	✓	✓	<b>✓</b>	✓	✓	✓	✓	✓	✓	
Classification and Phylogeny													
CO2: Proficiency in Botanical	<b>✓</b>	✓	✓	✓	✓	✓	✓	✓	<b>✓</b>	✓	✓	✓	
Nomenclature and Taxonomic Evidence													
CO3: Practical Skills in Taxonomy and Herbarium Techniques	<b>✓</b>	✓	<b>✓</b>	✓	<b>√</b>	<b>✓</b>	✓	<b>✓</b>	<b>✓</b>	✓	<b>√</b>	✓	
SAD265001P													
Practical - Cell and Molecular													
Biology													
CO1: Proficiency in Cytological	<b>✓</b>			✓	<b>✓</b>	✓			<b>✓</b>		<b>✓</b>		
Techniques													
CO2: Expertise in Molecular and	<b>✓</b>	✓	<b>√</b>		<b>√</b>		✓	<b>√</b>	<b>✓</b>	✓	<b>✓</b>	✓	
Biochemical Analysis													

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CO3: Competence in Advanced Microscopy and Enzyme Activity Demonstration	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>		<b>V</b>			<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>
SAD265011P												
Practical - Biology & Diversity												
of Algae and Bryophytes												
CO1: Proficiency in Algal and Bryophyte Morphology	<b>√</b>	<b>√</b>	<b>√</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	✓	✓	<b>√</b>	✓
CO2: Skill in Collection and	<b> </b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>√</b>	<b>✓</b>	<b>√</b>	<b>√</b>		✓	<b>✓</b>	<b>✓</b>
Preservation Techniques												
CO3: Capability to Analyze Vegetative	✓	<b>✓</b>	✓	✓	<b>✓</b>	✓	<b>✓</b>	✓	✓	✓	<b>✓</b>	✓
and Reproductive Structures												
SAD265021P												
<b>Practical - Taxonomy of</b>												
Angiosperms												
CO1: Mastery of Morphological and	<b>√</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	<b>√</b>
Phytographic Techniques												
CO2: Expertise in Plant Identification and	<b>√</b>	✓	<b>√</b>	<b>√</b>	<b>✓</b>	<b>√</b>	<b>✓</b>	✓	✓	✓	<b>✓</b>	<b>√</b>
Classification CO3: Practical Experience in Field Work	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>✓</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>✓</b>	<b>√</b>
and Herbarium Preparation	·	·	·		·	·	·	·	·	·	·	·
SAD265031P												
Practical - Horticulture												
Techniques												
CO1: Proficiency in Horticultural	<b>✓</b>	✓	✓	✓	✓	✓	<b>√</b>	✓	✓	✓	✓	<b>✓</b>
<b>Techniques and Tools</b>												
CO2: Mastery of Propagation Methods	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>		<b>√</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>✓</b>	<b>*</b>	<b>√</b>
CO3: Practical Experience in  Horticultural Practices and Product	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	✓	✓	✓	<b>√</b>	<b>✓</b>
Preparation												
SBD265041T												
<b>Crop Genetics and Plant</b>												
Breeding – I												
CO1: Understanding of Crop Genetic	<b>✓</b>	<b>✓</b>		<b>✓</b>		✓	✓		✓		✓	
<b>Resources and Conservation</b>												
CO2: Application of Plant Breeding	<b>✓</b>	✓	<b>✓</b>	✓	✓	✓	✓	✓	✓	✓	<b>√</b>	✓
Methods for Crop Improvement												,
CO3: Analysis and Management of Incompatibility and Male Sterility	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>✓</b>	✓	<b>√</b>	✓	✓	<b>✓</b>	✓
SBD265041P												

<b>Crop Genetics and Plant</b>												
Breeding – I												
CO1: Proficiency in Floral Biology and	✓	✓	<b>✓</b>	<b>✓</b>	✓	✓	✓	✓	✓	✓	<b>✓</b>	<b>✓</b>
Hybridization Techniques												
CO2: Competence in Analyzing Pollen Characteristics and Plant Sterility	✓	<b>√</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>√</b>	✓	<b>√</b>		✓		
CO3: Expertise in Chromosomal	✓		✓	<b>✓</b>	✓	✓	✓	✓		✓	✓	<b>✓</b>
Analysis for Genetic Studies												
SBD265051T												
Mycology and Plant Pathology-I												
CO1: Understanding of Plant Pathology	✓	✓	✓	<b>√</b>	✓	✓	✓	✓	✓	✓		<b>√</b>
and Disease Classification  CO2: Knowledge of Plant Diseases	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>✓</b>		<b>✓</b>	<b> </b>	<b>✓</b>
Caused by Parasites and Nematodes	·	,	,	ŕ	·	·	·	·		·		
CO3: Proficiency in Identifying and	✓		<b>√</b>	<b>✓</b>	✓	✓	✓	✓	✓	✓	<b>√</b>	<b>✓</b>
Managing Specific Plant Diseases												
SBD265051P												
Mycology and Plant Pathology-I							,					
CO1: Proficiency in Specimen Collection and Preservation	✓	<b>✓</b>	<b>√</b>	<b>✓</b>	✓	<b>√</b>	✓	<b>√</b>	✓	<b>√</b>	<b>√</b>	<b>✓</b>
CO2: Skillful Application of Diagnostic	✓	✓	<b>✓</b>	<b>✓</b>		✓	✓	✓	✓	<b>√</b>	<b>✓</b>	
<b>Techniques and Instrumentation</b>												
CO3: Competence in Disease	✓	<b>✓</b>	✓	<b>√</b>	✓	✓		✓	✓			<b>✓</b>
Identification and Field Studies  SBD265061T												
Taxonomy of Angiosperms – I  CO1: Comprehensive Understanding of	<b>√</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>✓</b>	✓	<b>✓</b>	<b>√</b>	<b>✓</b>
Angiosperm Characteristics and	·	,	, The state of the	,	·	·	·	•	•	·	·	·
Taxonomy Principles												
CO2: Critical Analysis of Angiosperm	✓	✓	<b>√</b>	✓		✓	✓	✓	✓	✓	<b>√</b>	<b>√</b>
Phylogeny and Classification Systems  CO3: Application of Taxonomic	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>√</b>		<b>✓</b>	<b>√</b>		<b> </b>	
Concepts and Phylogenetic	·	,	·	,	·	·		·	·		,	
Relationships												
SBD265061P												
Practical - Taxonomy of												
Angiosperms – I												
CO1: Skillful Analysis of Morphological	✓	<b>✓</b>	✓	✓	✓	✓	✓	<b>✓</b>	✓	✓	✓	<b>✓</b>
and Evolutionary Trends												
CO2: Proficient Identification and	✓	✓	✓	✓		<b>√</b>	✓	<b>√</b>	✓		<b>√</b>	

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<b>Classification of Plant Families</b>												
CO3: Practical Experience through	✓	✓	✓	<b>✓</b>	✓	✓	✓	✓	✓	✓	✓	✓
Fieldwork and Excursions												
SBD265071T												
<b>Advanced Plant Physiology and</b>												
Biochemistry – I												
CO1: Comprehensive Understanding of	✓	✓	✓	✓	✓	<b>✓</b>	✓	✓	✓	✓	✓	<b>√</b>
Plant Biochemistry												
CO2: Proficiency in Analytical	✓	✓	✓	<b>√</b>		✓	✓		✓	✓		✓
Techniques												
CO3: Application of Growth Analysis	✓		✓		✓	✓	✓	<b>√</b>	<b>√</b>	✓	✓	✓
and Radioactive Tracers												
SBD265071P												
<b>Advanced Plant Physiology and</b>												
Biochemistry – I												
CO1: Mastery of Biochemical	✓	✓	✓	✓		✓	✓		✓		✓	✓
<b>Estimation Techniques</b>												
CO2: Expertise in Chromatographic and	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spectrometric Methods												
CO3: Proficiency in Energy and	✓	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	✓	✓	<b>✓</b>	<b>✓</b>	<b>✓</b>	✓	<b>√</b>
Nutrient Estimation												
CO2: Proficiency in Assessing and	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Analyzing Diversity												
CO3: Knowledge of Agricultural	✓	✓	✓	✓	<b>√</b>	✓	✓	<b>√</b>	<b>√</b>	✓	✓	✓
Diversity and Biogeography												
SRD265101T	<b>√</b>	✓	✓	✓	<b>✓</b>	<b>✓</b>	✓	✓	✓	✓		
Research Methodology												