



SARDAR PATEL UNIVERSITY

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

Vallabh Vidyanagar

Gujarat

Academic Program Structure

&

Curriculum

(Aligned with NEP-2020)

Master of Science in Botany

NHEQF Level: 6.0/6.5

Entry NHEQF Level	:	5.5/6.0
Duration	:	Two Years (Four Semesters)
Total Courses	:	24
Total Learning Hours	:	2640
Total Credits	:	88
Total Marks	:	2200

Graduate Attributes (GAs) [12-15]

Upon successful completion of the M.Sc. Botany program, graduates are expected to attain the following graduate attributes:

- **GA1: Disciplinary Knowledge in Botany**

Demonstrate comprehensive understanding of fundamental and advanced concepts in plant sciences and their applications in research and practice.

- **GA2: Critical Thinking and Problem Solving**

Analyze botanical and environmental problems and develop evidence-based solutions using scientific reasoning and critical thinking approaches.

- **GA3: Digital and Information Literacy**

Access, evaluate, and apply digital and scientific information for knowledge acquisition, data analysis, and professional presentation.

- **GA4: Experimental and Research Skills**

Design and conduct laboratory, field, and molecular experiments and interpret scientific data using appropriate methodologies.

- **GA5: Scientific Communication Skills**

Communicate scientific concepts, research findings, and technical information effectively through written, oral, and visual formats.

- **GA6: Teamwork and Collaboration**

Work effectively in multidisciplinary teams to achieve shared scientific and professional goals.

- **GA7: Ethics and Professional Responsibility**

Apply ethical principles in scientific research, including data integrity, avoidance of plagiarism, and respect for intellectual property rights.

- **GA8: Environmental Sustainability and Responsibility**

Evaluate environmental challenges and apply sustainable practices in plant science research and applications.

- **GA9: Innovation and Entrepreneurship**

Design innovative solutions and develop entrepreneurial approaches for applications in agriculture, biotechnology, and plant-based industries.

- **GA10: Leadership and Project Management**

Demonstrate leadership qualities and manage scientific projects effectively in academic, research, and industrial settings.

- **GA11: Interdisciplinary Competence**

Apply interdisciplinary knowledge by integrating botany with emerging areas such as biotechnology, bioinformatics, and environmental sciences.

- **GA12: Lifelong Learning and Adaptability**

Demonstrate the ability to engage in lifelong learning and adapt to emerging technologies and advancements in plant sciences.

Programme Educational Objectives (PEOs): [5-8]

- **Within 2–3 years of completing the program, graduates will be able to:**
 - **PEO1: Apply** plant science knowledge and analytical skills in professional, research, and applied biological contexts.
 - **PEO2: Demonstrate** professional competence, ethical responsibility, and effective communication while working collaboratively in diverse environments.
 - **PEO3: Apply** interdisciplinary plant science knowledge to contribute to the development and application of scientific advancements.
 - **PEO4: Analyze** societal and environmental challenges and engage in lifelong learning for continuous personal and professional development.
 - **PEO5: Design** innovative and entrepreneurial solutions in plant sciences to address real- world problems and support sustainable development.

Program Learning Outcomes (PLOs): [10-12]

- **Upon successful completion of the program, learners will be able to:**
 - **PLO1: Demonstrate** comprehensive knowledge of fundamental and advanced concepts across diverse domains of botany.
 - **PLO2: Demonstrate** proficiency in laboratory, field, and molecular techniques and experimental procedures in plant sciences.
 - **PLO3: Demonstrate** professional ethics, academic integrity, and responsibility in scientific research and practice.
 - **PLO4: Engage** in lifelong learning and adapt to emerging scientific advancements and technologies in plant sciences.
 - **PLO5: Apply** interdisciplinary approaches by integrating plant science knowledge with modern tools and technologies.
 - **PLO6: Analyze** contemporary biological and environmental issues using plant science knowledge to propose evidence-based solutions.
 - **PLO7: Apply** critical and independent thinking to analyze scientific problems and develop logical solutions.
 - **PLO8: Design and conduct** experiments and analyses and interpret scientific data using appropriate methodologies.
 - **PLO9: Communicate** scientific information effectively through written, oral, and digital formats using appropriate terminology.
 - **PLO10: Evaluate** the impact of plant-based solutions in economic, environmental, and societal contexts.
 - **PLO11: Collaborate** effectively in multidisciplinary teams to address complex scientific and societal challenges.
 - **PLO12: Demonstrate** inquiry-based thinking to foster innovation and entrepreneurship in plant sciences.



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NEP-2020 aligned Curriculum with effect from Academic Year 2026-27

[Master of Science in Botany]

Semester-I

Course Type	Course Code	Course Title	Teaching-Learning		Credits	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	P2S01NCBOT01	Biology and Diversity of Lower Plants	4-0-1	120	4	30	20	50	50	100
DSC	P2S01NCBOT02	Biology and Diversity of Seed Plants	4-0-1	120	4	30	20	50	50	100
DSC	P2S01NCBOT03	Cell and Molecular Biology	4-0-1	120	4	30	20	50	50	100
DSC	P2S01NCBOT04	Laboratory I: Plant Diversity and Field	0-8-0	120	4	30	20	50	50	100
DSC	P2S01NCBOT05	Laboratory II: Cell Biology and Biomolecular Techniques	0-8-0	120	4	30	20	50	50	100
DSE (Any One)	P2S01NEBOT01	Bioethics & Biosafety	2-0-0	60	2	15	10	25	25	50
	P2S01NEBOT02	Entrepreneurship fundamentals	2-0-0							
	P2S01NEBOT03	Mathematics Essential for Biologist	2-0-0							
	P2S01NEBOT04	Principles of Ecology	1-2-0							
	P2S01NEBOT05	Pharmaceutical Microbiology	2-0-0							
				660	22			275	275	550

Note: Add/remove rows as per requirement.

DSC: Discipline Specific Core; DSE: Discipline Specific Elective; L: Lecture; P: Practical; T: Tutorial; FA: Formative Assessment;

SA: Summative Assessment

NOTE: TOTAL CREDITS: 22; TOTAL MARKS: 550/600 PER SEMESTER



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Semester-II

Course Type	Course Code	Course Title	Teaching-		Credits	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	P2S02NCBOT01	Fungal Biology and Plant-Pathogen Interaction	4-0-1	120	4	30	20	50	50	100
DSC	P2S02NCBOT02	Bio-Systematics of Angiosperm	4-0-1	120	4	30	20	50	50	100
DSC	P2S02NCBOT03	Genetics & Plant Breeding	4-0-1	120	4	30	20	50	50	100
DSC	P2S02NCBOT04	Laboratory I: Plant Cytogenetics and Quantitative Genetics Techniques	0-8-0	120	4	30	20	50	50	100
DSC	P2S02NCBOT05	Laboratory II: Systematics and Biotic	0-8-0	120	4	30	20	50	50	100
DSE (Any One)	P2S02NEBOT01	Biostatistics Using R	2-0-0	60	2	15	10	25	25	50
	P2S02NEBOT02	Microtechniques	1-2-0							
	P2S02NEBOT03	Developmental Biology	2-0-0							
	P2S02NEBOT04	Methods in Field Biology	2-0-0							
	P2S02NEBOT05	Medical Botany	2-0-0							
				660	22			275	275	550

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