



SARDAR PATEL UNIVERSITY

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

Vallabh Vidyanagar Gujarat

Academic Program Structure & Curriculum (Aligned with NEP-2020)

M.Sc. Environmental Science

NHEQF Level: 6.5

Entry NHEQF Level	:	5.5/6
Duration	:	Two Years (Four Semesters)
Total Courses	:	24
Total Learning Hours	:	2400
Total Credits	:	88
Total Marks	:	2200



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Graduate Attributes (GAs):

Upon successful completion of the programme, graduates are expected to attain the following Graduate Attributes:

GA1. Environmental Systems Knowledge

Demonstrate advanced understanding of environmental systems and interactions within the atmosphere, hydrosphere, lithosphere, and biosphere.

GA2. Critical Analytical Ability

Analyze environmental issues critically using interdisciplinary scientific approaches, evidence-based reasoning, and problem-solving skills.

GA3. Monitoring and Technical Expertise

Develop advanced expertise in modern environmental monitoring methods, instrumentation, sampling techniques, and data interpretation.

GA4. Disciplinary Knowledge

Demonstrate in-depth knowledge of environmental chemistry, microbiology, biotechnology, and toxicology for environmental applications.

GA5. Quantitative and Statistical Skills

Apply statistical and computational methods for analyzing environmental data and supporting informed decision-making.

GA6. Climate Change Understanding

Demonstrate advanced understanding of climate change science, its causes, impacts, mitigation strategies, and adaptation measures.

GA7. Environmental Decision-Making

Apply Environmental Impact Assessment (EIA) tools and procedures for sustainable planning, policy formulation, and decision-making.

GA8. Sustainability and Management Skills

Develop sustainable and innovative solutions for environmental management, conservation, and resource utilization.

GA9. Geospatial Competence

Demonstrate proficiency in Geographic Information Systems (GIS), remote sensing, and geospatial analysis for environmental assessment and management.

GA10. Policy and Governance Awareness

Demonstrate knowledge of national and international environmental policies, laws, regulations, and governance frameworks.

GA11. Risk Assessment Ability

Evaluate environmental and human health risks scientifically and recommend preventive or corrective measures responsibly.

GA12. Entrepreneurship and Consultancy Skills

Develop entrepreneurial abilities to provide consultancy, advisory, and professional services in environmental management sectors.



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GA13. Research and Literature Evaluation

Critically evaluate scientific literature, research publications, and emerging knowledge for evidence-based environmental practice.

GA14. Ethics and Professional Responsibility

Demonstrate ethical responsibility, integrity, and accountability while making decisions related to environmental protection and sustainability.

Programme Educational Objectives (PEOs):

Within 3-5 years of completing the programme the graduates will be able to:

PEO1. Develop interdisciplinary skills through the integration of chemistry, biology, geology, engineering, and allied sciences for environmental problem-solving.

PEO2. Solve complex environmental problems using scientific methods in ecology, pollution control, conservation, and sustainable development.

PEO3. Apply skills in environmental monitoring, assessment, and management for effective control and mitigation of environmental issues.

PEO4. Design, conduct, and contribute to research addressing real-life environmental challenges through scientific and innovative approaches.

PEO5. Pursue successful careers in teaching, industry, government organizations, research institutions, or consultancy in environmental and related sectors.

PEO6. Demonstrate innovation, critical thinking, and problem-solving abilities to address emerging environmental challenges effectively.

PEO7. Contribute responsibly to society by promoting environmentally sustainable practices, ethical values, and long-term ecological development.



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Program Learning Outcomes (PLOs):

Upon successful completion of the programme learners will be able to:

PLO1. Demonstrate in-depth and interdisciplinary knowledge of environmental science concepts with understanding of sustainability, ecological balance, and environmental responsibility.

PLO2. Apply scientific methods including monitoring, sampling, experimentation, and data analysis to investigate environmental issues while ensuring accuracy, safety, and ethical practices.

PLO3. Analyze the impact of human activities on natural ecosystems and propose sustainable, practical, and ethically responsible mitigation strategies.

PLO4. Apply modern tools such as GIS, remote sensing, and statistical software for environmental assessment, data accuracy, innovation, and sustainable decision-making.

PLO5. Demonstrate knowledge of environmental laws, policies, and regulations while ensuring ethical compliance and responsible environmental governance.

PLO6. Apply environmental science principles to develop sustainable natural resource management, biodiversity conservation, and ecological restoration strategies for societal well-being.

PLO7. Communicate scientific findings effectively through reports, presentations, publications, and professional interactions with clarity, teamwork, and professionalism.

PLO8. Assess environmental risks and design appropriate risk management strategies to ensure safety, sustainability, and public health protection.

PLO9. Interpret and analyze environmental data using advanced statistical, computational, and analytical tools while maintaining data integrity and ethical standards.

PLO10. Demonstrate the ability to work independently and collaboratively in multidisciplinary teams with leadership, accountability, and respect for diverse perspectives.

Program Specific Outcomes (PSOs):

PSLO1. Design and implement effective strategies for pollution control, waste management, and environmental remediation.

PSLO2. Conduct independent research and apply environmental policies, impact assessment methods in professional practices.



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M.Sc. Environmental Science

Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme		Credits	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	P2T01NCENS01	Environmental Microbiology and Ecology	4-0-1	120	4	20	30	50	50	100
DSC	P2T01NCENS02	Air Pollution and Climate Change	4-0-1	120	4	20	30	50	50	100
DSC	P2T01NCENS03	Environmental Chemistry and Geology	4-0-1	120	4	20	30	50	50	100
DSC	P2T01NCENS04	Practicals based on Environmental Microbiology and Air Pollution and Climate Change	0-8-0	120	4	20	30	50	50	100
DSC	P2T01NCENS05	Practicals based on Environmental Chemistry and Geology and Introduction to Sustainable Development	0-8-0	120	4	20	30	50	50	100
DSC	P2T01NCENS06	Introduction to Sustainable Development	2-0-1	60	2	10	15	25	25	50
				660	22					550

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



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Semester-II

Course Type	Course Code	Course Title	Teaching-Learning Scheme		Credits	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	P2T02NCENS01	Remote Sensing and Geographic Information System	4-0-1	120	4	20	30	50	50	100
DSC	P2T02NCENS02	Water Pollution and Control Technology	4-0-1	120	4	20	30	50	50	100
DSC	P2T02NCENS03	Environmental Toxicology and Occupational Health	4-0-1	120	4	20	30	50	50	100
DSC	P2T02NCENS04	Practicals based on Remote Sensing and Water Pollution	0-8-0	120	4	20	30	50	50	100
DSC	P2T02NCENS05	Practicals based on Environmental Toxicology and Meteorology	0-8-0	120	4	20	30	50	50	100
DSC	P2T02NCENS06	Environmental and Meteorological Instrumentation	2-0-1	60	2	10	15	25	25	50
				660	22					550

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