



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. Zoology]

NHEQF Level: 6.0/6.5

Entry NHEQF Level	:	6
Duration	:	Two Years (Four Semesters)
Total Courses	:	20
Total Learning Hours	:	2640
Total Credits	:	88
Total Marks	:	2200



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Graduate Attributes (GAs)

Upon successful completion of the M.Sc in Zoology programme, graduates are expected to attain the following Graduate Attributes:

GA1. Advanced knowledge in Zoology

Demonstrate comprehensive knowledge of animal sciences from molecular, cellular, organismal, ecological, evolutionary and environmental dimensions.

GA2: Research Aptitude and Competency

Develop hypothesis, design and conduct laboratory and field-based investigations, and interpret experimental data using appropriate scientific methods.

GA3. Data analysis and digital literacy

Apply statistical tools, bioinformatics, GIS, and computational methods for analysis and interpretation of biological data.

GA4. Experimental and technical skills

Demonstrate proficiency in modern laboratory techniques, instrumentation, and field methodologies relevant to zoological sciences.

GA5. Communication skills

Communicate scientific information effectively through research papers, reports, presentations, and outreach activities.

GA6. Ethics and professional responsibility

Apply ethical principles in animal research, biosafety, environmental protection, and intellectual property practices.

GA7. Sustainability and Environmental Awareness

Analyse issues related to biodiversity conservation, climate change, wildlife health, and sustainable resource management.

GA8. Interdisciplinary integration

Integrate concepts from molecular biology, ecology, physiology, and environmental sciences to address complex biological problems.

GA9. One health and societal relevance

Evaluate interactions among animal, human, and ecosystem health, applying integrative approaches in disease ecology and zoonoses.



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GA10. Innovation and entrepreneurship

Apply innovative thinking and entrepreneurial skills in areas such as aquaculture, wildlife management, and environmental services.

GA11. Adaptability to emerging technologies

Demonstrate adaptability to emerging tools such as omics technologies, AI in biology, molecular diagnostics, and ecological modelling.

GA12. Reflective Thinking and Lifelong learning

Continuously evaluates one's learning and adapts to emerging scientific knowledge and technologies.

These attributes empower the M.Sc. Zoology program to impart advanced knowledge of animal biology and allied life sciences while nurturing holistic development, enabling graduates to contribute effectively to research, biodiversity conservation, environmental sustainability, and societal well-being.

Programme Educational Objectives (PEOs):

Within two years of completing the program, graduates will be able to:

PEO1: Apply Zoological knowledge and analytical skills in research, academia, environmental management, and allied biological sectors.

PEO2: Contribute effectively to biodiversity conservation, sustainable development, and environmental problem-solving using scientific approaches.

PEO3: Demonstrate professional ethics, effective communication, and teamwork in multidisciplinary environments.

PEO4: Apply innovation and entrepreneurial skills in aquaculture, wildlife management, and biological services.

PEO5: Engage in lifelong learning and advanced research to address emerging challenges in zoology and life sciences.

Program Learning Outcomes (PLOs):

Upon successful completion of the program, learners will be able to:



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PLO 1: Demonstrate advanced knowledge of animal diversity, systematics, physiology, molecular biology, and evolution.

PLO 2: Apply interdisciplinary approaches integrating molecular, ecological, and organismal biology.

PLO 3: Design and conduct laboratory and field experiments using appropriate scientific methods.

PLO 4: Analyse biological data using statistical and computational tools.

PLO 5: Demonstrate proficiency in modern laboratory techniques and field

methodologies. **PLO 6:** Analyse environmental and anthropogenic impacts on animal health and biodiversity. **PLO 7:** Apply ethical principles in animal research, biosafety, and conservation practices.

PLO 8: Interpret and communicate scientific data through written, oral, and visual formats.

PLO 9: Analyse contemporary issues such as climate change, zoonoses, stress biology, and ecosystem health.

PLO 10: Demonstrate leadership and entrepreneurial skills in biological applications.

PLO11: Work collaboratively in multidisciplinary teams to address scientific and societal challenges.

PLO12: Engage in lifelong learning and continuous professional development.



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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	P2S01NCZOO01	Functional Anatomy and Physiology	4-0-1	120	4	30	20	50	50	100
DSC	P2S01NCZOO02	Principles of Immunology	4-0-1	120	4	30	20	50	50	100
DSC	P2S01NCZOO03	Molecular Cell Biology	4-0-1	120	4	30	20	50	50	100
DSC	P2S01NCZOO04	Laboratory Course -I (Practical)	0-8-0	120	4	30	20	50	50	100
DSC	P2S01NCZOO05	Laboratory Course -II (Practical)	0-8-0	120	4	30	20	50	50	100
DSE (Any One)	P2S01NEZOO01	Biosafety and Bioethics	2-0-0	60	2	15	10	25	25	50
	P2S01NEZOO02	Entrepreneurship Fundamentals	2-0-0							
	P2S01NEZOO03	Principles of Ecology	2-0-0							
	P2S01NEZOO04	Pharmaceutical Microbiology	2-0-0							
	P2S01NEZOO05	Mathematics for Biologists	2-0-0							
				660	22			275	275	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	Teachin		Credits	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	P2S02NCZOO01	Molecular Biology and Clinical Genetics	4-0-0	120	4	30	20	50	50	100
DSC	P2S02NCZOO02	Advanced Developmental Biology	4-0-0	120	4	30	20	50	50	100
DSC	P2S02NCZOO03	Molecular and Applied Endocrinology	4-0-0	120	4	30	20	50	50	100
DSC	P2S02NCZOO04	Laboratory Course -I (Practical)	0-8-0	120	4	30	20	50	50	100
DSC	P2S02NCZOO05	Laboratory Course -II (Practical)	0-8-0	120	4	30	20	50	50	100
DSE (Any One)	P2S02NEZOO01	Biostatistics using R	0-4-0	60	2	15	10	25	25	50
	P2S02NEZOO02	Microtechniques	2-0-0							
	P2S02NEZOO03	Methods in Field Biology	1-2-0							
	P2S02NEZOO04	AI in Biology	2-0-0							
				660	22			275	275	550

DSC: Discipline Specific Core **DSE:** Discipline Specific Elective **L:** Lecture **P:** Practical **T:** Tutorial

FA: Formative Assessment **SA:** Summative Assessment