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 Statistics

NHEQF Level: 6.5

Entry NHEQF Level	:	6
Duration	:	Two Years (Four Semesters)
Total Courses	:	24
Total Learning Hours	:	2640
Total Credits	:	88
Total Marks	:	2200

Graduate Attributes (GAs)

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

GA1. Deep Discipline Knowledge and Intellectual Breadth

Demonstrate and apply statistical methods and methodology.

GA2. Creative and Critical Thinking and Problem-Solving Adaptability

Demonstrate comprehensive understanding of statistical theory, probability, and inferential methods and apply them in diverse fields and contexts.

GA3. Teamwork, Adaptability and Communication Skills

Work effectively in multidisciplinary teams and communicate statistical findings clearly.

GA4. Digital Capabilities and Statistical Computing

Use statistical computing tools to analyse data, develop models, and interpret results effectively.

GA5. Data Analysis and Data Driven Decision Capacity

Use statistical computing tools to analyse data, develop models, and interpret results effectively.

GA6. Inter-, Multi- and Trans-Disciplinary Approaches

Engage in continuous learning to adapt to emerging developments in statistics and data science.

GA7. Industry, Corporate and Government Mapping

Apply statistical reasoning to address real-world problems in governance, healthcare, economics, and social development.

GA8. Data Visualization and Communication

Apply appropriate data visualization techniques to represent statistical findings clearly and support decision-making.

GA9. Research and Inquiry

Design and conduct statistical investigations, analyse data, and interpret results using appropriate methodologies.

GA10. Global Standard Report Writing Skills

Demonstrate the ability to produce high-quality statistical reports adhering to professional standards.

GA11. Ethics and Self-Awareness

Apply ethical principles in data collection, analysis, interpretation, and reporting.

GA12. Professionalism and Leadership Readiness

Demonstrate professionalism, accountability, and integrity in statistical practice.

Program Educational Objectives (PEOs):

Within 3-5 years of completing the M.Sc. programme, graduates will be able to:

PEO1. Apply statistical knowledge and analytical skills in professional contexts.

PEO2. Conduct multi- disciplinary and collaborative research using advanced statistical methods.

PEO3. Adapt to emerging trends in statistics and data science.

PEO4. Assume leadership and teamwork skills in academia, industry, corporate by contributing to planning, execution and data decisions.

PEO5. Promote ethical and socially responsible practices in data collection, analysis, and reporting.

PEO6. Design statistical methodology to address real-world problems in public policy and social development.

PEO7. Integrate statistical computing tools and data science techniques in professional and research practices.

Program Learning Outcomes (PLOs):

Upon successful completion of the M. Sc. Programme learners will be able to:

PLO1. Apply statistical and computational skills to solve real-world problems of data analysis and interpretation across Clinical, Financial, Managerial, Governmental and Academia domains.

PLO2. Design and implement experiments for efficient data collection and analysis.

PLO3. Demonstrate comprehensive knowledge of statistical theory, probability and their applications in various domains

PLO4. Formulate, test, and validate statistical hypotheses using appropriate inferential techniques.

PLO5. Apply analytical, critical thinking, and statistical modelling skills to analyze and interpret data for evidence-based decision-making.

PLO6. Implement classification, clustering, correspondence and other data science techniques using computational statistics.

PLO7. Design and implement sample survey using appropriate sampling techniques and analyze survey data with precision.

PLO8. Develop advanced statistical models such as autoregressive time series, multivariate, generalized, stochastic and semi-parametric regression models.

PLO9. Write R-, Python code for statistical objective and use MS Excel, SPSS, MINITAB for data analysis, simulation, modelling and Power BI for data visualization.

PLO10. Communicate statistical findings effectively through reports, visualizations.

PLO11. Apply ethical principles in data collection, analysis, interpretation, and reporting.

PLO12. Work effectively in multidisciplinary teams to solve data-driven problems.

PLO13. Develop ability think statistically and produce new statistical theorem and proof.

PLO14. Teach courses on Statistics, Applied Statistics and Data Science.

PLO15. Lead a team for planning, execution and conclusion for project involving database.

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

Master of Science Statistics

Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme		Credits/ hour/ week	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	**P2S01NCSTA01**	Statistical Inference - I	4-0-0	120	4/4	25	25	50	50	100
DSE **(Any One)**	**P2S01NESTA01**	Matrix and Linear Models Theory	4-0-0	120	4/4	25	25	50	50	100
	P2S01NESTA02	Matrix and Operations Research								
DSE **(Any One)**	**P2S01NESTA03**	Probability and Distribution Theory	4-0-0	120	4/4	25	25	50	50	100
	P2S01NESTA04	Official Statistics								
DSC	**P2S01NCSTA02**	Practical (LMR, Fitting of Distributions) through R	0-4-0	120	4/8	25	25	50	50	100
DSC	**P2S01NCSTA03**	Practical (TH, OR, OFS) through Excel	0-4-0	120	4/8	25	25	50	50	100
DSC	**P2S01NCSTA04**	Management Tools for Industry Mapping	1-1-0	60	2/3	15	10	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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Master of Science Statistics

Semester-II

Course Type	Course Code	Course Title	Teaching-Learning Scheme		Credits/ hour/ week	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	**P2S02NCSTA01**	Statistical Inference - II	4-0-0	120	4/4	25	25	50	50	100
DSE **(Any One)**	**P2S02NESTA01**	Regression Modelling	4-0-0	120	4/4	25	25	50	50	100
	P2S02NESTA02	Market Research								
DSE **(Any One)**	**P2S02NESTA03**	Stochastic Models Theory	4-0-0	120	4/4	25	25	50	50	100
	P2S02NESTA04	Sample Survey Techniques								
DSC	**P2S02NCSTA02**	Practical (RM, SM) through Python	0-4-0	120	4/8	25	25	50	50	100
DSC	**P2S02NCSTA03**	Practical (SS, MR) through R and Excel	0-4-0	120	4/8	25	25	50	50	100
DSC	**P2S02NCSTA04**	Lean Six Sigma Tools	0-2-0	60	2/4	15	10	25	25	50
				660	**22**					**550**

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