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 Quality and Productivity Management

NHEQF Level: 6.5

Entry NHEQF Level	:	6
Duration	:	Two Years (Four Semesters)
Total Courses	:	20
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. Data-Driven Decision Making

Competence to apply statistical techniques, quality tools and management methods to analyze process performance and make evidence-based decisions.

GA2. Statistical and Engineering Process Control

Proficiency in developing and interpreting statistical tools to monitor process stability and identify variation.

GA3. Quality Data Interpretation

Capacity of utilizing statistical knowledge to understand data, interpret results and recommend business strategies.

GA4. Entrepreneurship

Mastery to identify gap, innovate business idea, perform SWOT analysis and come up with a business plan considering reduce waste and variation.

GA5. International Organization for Standardization

Expertise in conduct of audit and implementation of international standards for quality management system.

GA6. Industry Mapping

Ability to map industry environment, work flow, management, capacity and pitfalls.

GA7. System Optimization

Skill in analyzing organizational systems to optimize efficiency.

GA8. Project Management Skills

Capability to plan, brainstorm, collaborate, execute, monitor, and guide quality projects.

GA10. Cross-Functional Leadership

Capacity to lead teams in implementing quality culture and managing organizational change.

GA11. Ethical and Strategic Responsibility

Share responsibility of the ethical, social, and environmental (ESG) implications of quality decisions.

GA12. Effective Communication

Ability to communicate technical findings and non-conformities clearly to both technical and non-technical stakeholders.

Program Educational Objectives (PEOs):

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

PEO1. Develop profound understanding of statistical quality control, advanced data analytics, and modelling techniques to systematically analyze and solve complex organizational quality problems.

PEO2. Excel in the implementation of Lean Six Sigma methodology employed to improve process efficiency, reduce waste, and eliminate defects in manufacturing and service sectors.

PEO3. Design, implement, and audit Integrated Management Systems clauses based on international standards ISO, ensuring operational excellence and customer satisfaction.

PEO4. Analyze operational systems from a strategic perspective, utilizing tools of Six Sigma and quality management to drive productivity, enhance performance, and increase profitability.

PEO5. Foster professional growth, analytical thinking, and ethical responsibility, preparing graduates for leadership roles in quality management, consultancy, or research in various industrial environments.

PEO6. Integrate statistical computing tools and data science techniques in quality enhancement at any industry and those with business guts will start their own enterprise.

Program Learning Outcomes (PLOs):

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

PLO1. Apply advanced statistical tools—including probability distributions, process capability analysis, and hypothesis testing—to analyze and solve complex quality problems.

PLO2. Master the DMAIC (Define, Measure, Analyze, Improve, Control) framework, utilizing tools like SPC, DOE, and FMEA to improve process performance, eliminate non-value-added activities, and reduce process variation.

PLO3. Analyze and implement international quality standards, specifically ISO 9001, 14001 and 45001, to design robust integrated management systems (IMS) and ensure conformity to customer requirements.

PLO4. Identify root causes of inefficiencies and implement data-driven solutions that improve productivity and performance, simulating real-world industry scenarios.

PLO5. Demonstrate leadership in operational improvement projects, integrating Lean tools with Six Sigma strategies to enhance competitiveness and drive organizational change.

PLO6. Interpret and present complex statistical data, quality metrics, and project outcomes to stakeholders using professional reporting and visualization tools.

PLO7. Formulate and execute small-to-medium range industrial projects that integrate technical statistical findings with financial and operational perspectives.

PLO8. Analyze organizational systems from a process-oriented perspective to reduce waste, improve cycle times, eliminate non-value-added activities, and enhance throughput using lean principles.

PLO9. Communicate statistical findings obtained through MS Excel, MINITAB, SPSS effectively through reports, visualizations.

PLO10. Serve as change agents (HR, QC, Data Warehouse and R&D) within an organization, effectively communicating complex data-driven insights and quality reports to both technical and non-technical stakeholders.

PLO11. Ensure safety (HIRA), professional integrity in data, and compliance.

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

PLO13. Lead a team and make them grasp the Taguchi's wisdom of cost is more important than quality but quality is the best way to reduce cost.

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

Master of Science Quality and Productivity Management

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	**P2S01NCQPM01**	Business Statistics	4-0-0	120	4/4	25	25	50	50	100
DSC	**P2S01NCQPM02**	Operations Research	4-0-0	120	4/4	25	25	50	50	100
DSC	**P2S01NCQPM03**	Statistical Quality Control Techniques	4-0-0	120	4/4	25	25	50	50	100
DSC	**P2S01NCQPM04**	Data Base Management System Using SQL	0-4-0	120	4/8	25	25	50	50	100
DSC	**P2S01NCQPM05**	Statistical Analysis Using MS-Excel	0-4-0	120	4/8	25	25	50	50	100
DSC	**P2S01NCQPM06**	Communication Skills	1-1-0	60	2/3	15	10	25	25	50
				660	**22**					**550**

DSC: Discipline Specific Core **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/ hour/ week	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	**P2S02NCQPM01**	Fundamental of HRM and supply Chain Management	4-0-0	120	4/4	25	25	50	50	100
DSC	**P2S02NCQPM02**	Market Research	4-0-0	120	4/4	25	25	50	50	100
DSC	**P2S02NCQPM03**	Management of Productivity	4-0-0	120	4/4	25	25	50	50	100
DSC	**P2S02NCQPM04**	Statistical Methods Through SPSS	0-4-0	120	4/8	25	25	50	50	100
DSC	**P2S02NCQPM05**	Planning of Industrial Experiments Through Minitab	0-4-0	120	4/8	25	25	50	50	100
DSC	**P2S02NCQPM06**	Google Data Analytics	1-1-0	60	2/3	15	10	25	25	50
				660	**22**					**550**

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