



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 (Information Technology)

NHEQF Level: 6.5

Entry NHEQF Level	:	5.5
Duration	:	Two Years (Four Semesters)
Total Courses	:	22
Total Learning Hours	:	2640
Total Credits	:	88
Total Marks	:	2050

Graduate Attributes (GAs)

Upon successful completion of the **M.Sc. (Information Technology)** programme, graduates are expected to attain the following Graduate Attributes:

GA-1. Contemporary IT Knowledge

Demonstrate advanced knowledge of computing, software systems, data structures, algorithms, networking, and emerging IT technologies, applying analytical and problem solving skills with professional responsibilities.

GA-2. Computational Thinking & Problem Solving

Apply computational thinking, algorithmic design, and analytical reasoning to solve complex and real-world IT problems efficiently.

GA-3. Software Development & Engineering Skills

Design, develop, test, and maintain robust, scalable, and secure software systems using modern programming paradigms and tools.

GA-4. Data Management & Analytics

Analyse and interpret datasets using data science techniques, statistical tools, and machine learning methods to support decision-making.

GA-5. Research & Innovation Capability

Conduct independent research, develop innovative IT solutions, and contribute to advancements in areas like artificial intelligence, IoT, etc.

GA-6. Digital & Technological Proficiency

Utilise advanced computing tools, programming environments, cloud platforms, and digital technologies effectively in academic and industrial contexts.

GA-7. Cybersecurity Awareness & Ethical Practice

Apply principles of information security, data privacy, and ethical computing, ensuring integrity and responsible use of technology.

GA-8. Communication & Technical Documentation

Communicate complex IT concepts clearly through technical writing, presentations, documentation, and collaboration tools.

GA-9. Teamwork, Leadership & Project Management

Work effectively in multidisciplinary teams, demonstrate leadership, and manage IT projects using agile and modern project management methodologies.

GA-10. Lifelong Learning & Adaptability

Engage in updating oneself for adapting to rapidly evolving technologies through continuous learning, professional development, and self-directed upskilling.

GA-11. Entrepreneurship & Industry Readiness

Demonstrate entrepreneurial skills, innovation in IT-based solutions, and readiness for careers in industry, startups, or consultancy.

GA-12. Social, Legal, Environmental Responsibility & Indian Knowledge Systems (IKS)

Apply software development skills with quality assurance, ethical responsibility, and collaborative teamwork, while integrating principles of Indian Knowledge Systems (IKS) to promote sustainable, culturally aware, and inclusive technological development.

Programme Educational Objectives (PEOs):

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

PEO1: Demonstrate professional competence in computing and IT sectors and academic institutions, who will be able to apply the principles of computing science and project management to develop and deploy solutions for real-world problems.

PEO2: Identify, formulate, analyse, evaluate, and design complex computing applications by doing systematic and in-depth research in the related problem domains, using modern tools, and communicating effectively among the various stakeholders.

PEO3: Integrate latest digital technologies and innovative approaches in teaching, research, and professional practices for the benefit of society.

PEO4: Demonstrate ethical practices, leadership qualities, and professional responsibility while working in multidisciplinary environments, contributing effectively to organisational and societal development.

PEO5: Adapt to emerging technologies and evolving industry requirements through continuous learning, research engagement, and professional development in computing and IT domains.

Program Learning Outcomes (PLOs):

Upon successful completion of the M.Sc.(Information Technology) programme, learners will be able to:

- PLO1:** Demonstrate advanced and integrated understanding of computer science principles, including programming paradigms, operating systems, computer networks, databases, software engineering, cybersecurity, cloud computing, artificial intelligence, and data science to analyse complex computing systems and architectures.
- PLO2:** Critically evaluate the interaction between hardware, operating systems, networks, databases, and application frameworks to design efficient, secure, and scalable computing solutions.
- PLO3:** Design and develop software solutions with consideration for security, ethics, and societal impact using modern programming languages, frameworks, and platforms (such as Python, Java, .NET, Web, Mobile, Embedded & IoT) to address real-world and industry-oriented problems.
- PLO4:** Apply advanced computational techniques, algorithms, and system tools to integrate emerging technologies in innovative application development.
- PLO5:** Analyse, model, and interpret complex datasets using machine learning and statistical techniques to generate valid insights, predictions, and evidence-based conclusions.
- PLO6:** Design and develop technically sound projects, prototypes, or research reports that demonstrate originality, critical evaluation, academic integrity, and adherence to ethical research practices.
- PLO7:** Communicate complex technical concepts, designs, and research findings effectively through written reports, documentation, presentations, and code repositories while working independently and in multidisciplinary teams.
- PLO8:** Demonstrate leadership, responsibility, and decision-making skills in managing software projects, including planning, quality assurance, risk management, and coordination in professional and academic environments.
- PLO9:** Apply professional ethics, cybersecurity principles, constitutional values, inclusivity, environmental sustainability, and social responsibility while designing and deploying computing solutions.
- PLO10:** Demonstrate adaptability to rapid technological changes through continuous learning, self-upskilling, and professional development, enabling readiness for employment, entrepreneurship, higher research, or emerging career roles.



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

M.Sc. (Information Technology)

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	P2S01NCINT01	Python Programming	4-0-0	120	04	20	30	50	50	100
DSC	P2S01NCINT02	Database Management Systems	4-0-0	120	04	20	30	50	50	100
DSC	P2S01NCINT03	Artificial Intelligence	4-0-0	120	04	20	30	50	50	100
DSC	P2S01NCINT04	Computer Networks	4-0-0	120	04	20	30	50	50	100
DSC	P2S01NCINT05	Computer Fundamentals	2-0-0	60	02	10	15	25	25	50
DSC	P2S01NCINT06	Practicals - I	0-8-0	120	04	20	30	50	50	100
				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	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	P2S02NCINT01	Object-Oriented Programming with Java	4-0-0	120	04	20	30	50	50	100
DSC	P2S02NCINT02	Web Technology	4-0-0	120	04	20	30	50	50	100
DSC	P2S02NCINT03	Machine Learning	4-0-0	120	04	20	30	50	50	100
DSC	P2S02NCINT04	Cyber Security	4-0-0	120	04	20	30	50	50	100
DSC	P2S02NCINT05	Software Engineering	2-0-0	60	02	10	15	25	25	50
DSC	P2S02NCINT06	Practicals - II	0-8-0	120	04	20	30	50	50	100
				660	22					550

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