



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. (Electronics and Communication)]

NHEQF Level: 6.5

Entry NHEQF Level	:	5.5
Duration	:	Two Years (Four Semesters)
Total Courses	:	32
Total Learning Hours	:	2640
Total Credits	:	88
Total Marks	:	2200

Graduate Attributes (GAs)

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

GA1. Advanced Disciplinary Knowledge

Apply the advanced and integrated knowledge in a specialized area of study, supported by a strong conceptual understanding of underlying principles, theoretical frameworks, and current developments in the field.

GA2. Critical Thinking and Analysis

Ability to critically examine physical phenomena, evaluate evidence, and connect theoretical concepts with mathematical reasoning to arrive at valid scientific conclusions.

GA3. Problem Solving and Innovation

Analyse and solve complex problems using scientific reasoning and appropriate analytical tools.

GA4. Analytical Reasoning and Application

Analyse experimental and theoretical outcomes and apply findings to related problems.

GA5. Creativity and Innovation

Demonstrate the capacity for creative thinking and innovation, enabling them to develop new ideas, approaches, or solutions in scientific, technological, or professional contexts

GA6. Research and Inquiry Skills

Conduct systematic investigation and inquiry, including formulation of research questions, analysis of data, and interpretation of results using appropriate scientific methods.

GA7. Digital and Computational Competence

Use modern computational tools, information technology, and digital resources effectively for problem solving, research, and professional practice.

GA8. Communication Skills

Communicate ideas, analyses, and conclusions effectively through written, oral, and graphical forms to both specialist and non-specialist audiences.

GA9. Teamwork and Leadership

Integrate to work effectively both independently and collaboratively, contributing constructively to team activities and assuming leadership responsibilities when required.

GA10. Ethics and Professional Responsibility

Demonstrate professional integrity, ethical conduct, and accountability in academic, educational, industrial, or societal contexts.

GA11. Environmental and Sustainability Awareness

Understand environmental and sustainability implications and promote sustainable practices

GA12. Lifelong Learning and Adaptability

Possess the motivation and ability for continuous learning, intellectual curiosity, and professional development, enabling them to adapt to emerging knowledge, technologies, and interdisciplinary challenges.

Programme Educational Objectives (PEOs):

Within 2–3 years of completing the programme, graduates will be able to:

PEO1 Graduates will establish careers in education, research, and industry by applying advanced knowledge of Electronics and Communication.

PEO2 Graduate will apply principles of Electronics, mathematical reasoning, and computational tools to analyze and solve scientific or technological problems in professional practice.

PEO3 Graduates will contribute to teaching and dissemination of scientific knowledge using effective communication strategies.

PEO4 Graduate will demonstrate professional integrity in academic and industrial contexts.

PEO5 Graduate will engage in continuous learning and skill development to adapt to emerging technologies, and interdisciplinary opportunities.

PEO6 Graduate will apply scientific knowledge responsibly to address societal challenges and support environmentally sustainable development.

Program Learning Outcomes (PLOs):

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

- PLO1** Demonstrate advanced knowledge and critical understanding of core and specialized areas of Electronics and Communication, including Satellite Communication, Mobile Communication, GPS, Antennas, Radio Engineering, computational Technique, Electromagnetics, VLSI Technology and Psoc.
- PLO2** Employ sophisticated mathematical methods with proficiency to solve various physical systems analytically with enhanced precision.
- PLO3** Analyze complex physical problems using logical reasoning, mathematical formulation, computational tools, and data analysis, and evaluate scientific arguments using evidence-based reasoning.
- PLO4** Design experiments, operate advanced equipment, control variables, perform calibration, uncertainty analysis, minimize errors and adhere to safety protocols in laboratories.
- PLO5** Employ statistical methods, error analysis, and visualization techniques to extract insights from experimental or simulated data and validate conclusions rigorously.
- PLO6** Evaluate synthesis and characterization techniques for size dependent properties of materials for their industrial and environmental applications.
- PLO7** Design and assess materials along with simulations for modern device applications.
- PLO8** Enhance computational proficiency for solving research, industrial and societal problems as well as develop new methodologies and/or processes for their analyses and solutions.
- PLO9** Undertake competency in the foundational principles of Electronics and Communication and examine the interface of physical sciences.
- PLO10** Design and develop renewable energy solutions and energy management strategies for real- world applications.



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NEP-2020 aligned Curriculum with effect from Academic Year 2026-27
[M.Sc. (Electronics and Communication)]

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	P2S01NCELC01	Analog Interface Electronics	4-0-0	120	4	25	25	50	50	100
DSC	P2S01NCELC02	Signal & System	4-0-0	120	4	25	25	50	50	100
DSC	P2S01NCELC03	8 Bit Microcontroller and Applications	4-0-0	120	4	25	25	50	50	100
DSC	P2S01NCELC04	Practical – I	0-8-0	120	4	25	25	50	50	100
DSC	P2S01NCELC05	Practical – II	0-8-0	120	4	25	25	50	50	100
SKILL	P2S01NSELC01	Advanced Network Analysis	1-2-0	60	2	15	10	25	25	50
				660	22	140	135	275	275	550

DSC: Discipline Specific Core

DSE: Discipline Specific Elective

SKILL

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	P2S02NCELC01	Electromagnetics and Antenna Technology	4-0-0	120	4	25	25	50	50	100
DSC	P2S02NCELC02	Analog & Digital Communication	4-0-0	120	4	25	25	50	50	100
DSC	P2S02NCELC03	Programming in C / C++	4-0-0	120	4	25	25	50	50	100
DSC	P2S02NCELC04	Practical	0-8-0	120	4	25	25	50	50	100
DSC	P2S02NCELC05	Project	0-8-0	120	4	25	25	50	50	100
SKILL	P2S02NSELC01	Advanced Electronic Devices, Microwave and Quantum Systems with IKS Perspectives	1-2-0	60	2	15	10	25	25	50
				660	22	140	135	275	275	550

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