



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
DSC	P2S01NCELC01	Analog Interface Electronics	3-0-1	120	04

- Course Learning Outcomes (CLOs)** On completion of this course, students will be able to:

CLO 1:.	Analyze carrier transport phenomena in semiconductors, including drift, diffusion, recombination mechanisms, and variation of Fermi level under different temperature and doping conditions
CLO 2:.	Apply appropriate experimental techniques such as Hall effect and four-probe methods to determine semiconductor parameters like carrier concentration, mobility, and resistivity.
CLO 3:.	Assess the role of semiconductor devices in sustainable technologies (e.g., solar energy systems)
CLO 4:.	Explain the fundamental principles of quantum mechanics, crystal structure, and band theory governing semiconductor materials, including concepts of energy bands, charge carriers
CLO 5:.	Examine the physics and operational characteristics of semiconductor junctions and interfaces, including P-N junctions, Schottky contacts, heterojunctions, and MOS structures..
CLO 6:.	Evaluate and design semiconductor-based electronic and optoelectronic devices such as diodes, solar cells, photodetectors, LEDs, and display systems for practical applications.

Unit	Course Content	Learning Pedagogies*	CLO(s)
I	Energy bands in semiconductor material, intrinsic and extrinsic semiconductor, carrier transportation, diffusion current, drift current, mobility, resistivity, generation and recombination of carriers, Hall Effect.	CL, Seminars, Inquiry-Based Learning	CLO1, CLO2
II	PN Junction diode characteristics & its application, zener diode, LED, LDR, tunnel diode, Varactor diode, Schottkey diode, BJT, JFETs, MOSFETs	CL, PBL, ICT-Enabled Learning	CLO3
III	Differential amplifier and its DC & AC analysis, block diagram of OPAMP and its parameters, frequency response, current mirror and current loading biasing, concept of ideal op-amp, specification of standard op-amp like IC 741, LM324, μA 741.	CL, ICT-enabled learning,	CLO4
IV	Voltage amplifier, summing amplifier, averaging amplifier, current source, differential amplifier, instrumentation amplifier, filters: LPF, HPF, BPF and all pass filter.	CL, Seminars, CBL, Mini Projects	CLO5, CLO6



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Assessment Methodologies

(A) Internal Assessment

a. Internal Formative assessment

- (a) MCQ and Objective question Quiz
- (b) Seminar/Presentation and Group Discussion
- (c) Assignments

b. Internal Summative Assessment

- (a) Mid-term tests

(B) Weightage of Learning Efforts for External Assessment

Unit	Aligned CLOs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/ Analyse & above (A)	
I	CLO1, CLO2	30	3	3	8	14
II	CLO3	30	3	3	8	14
III	CLO4	30	2	2	7	11
IV	CLO5, CLO6	30	2	2	7	11
		120	10	10	30	50

Assessment and Evaluation

Sr. No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	Seminars, Assignments, Quizzes, Mid Term Test, Class Regularity, Group Discussion	50
2	End-Semester Examination	Written Exam	50

(C) CLOs – PLOs Matrix

CLO	PLO										
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CLO1	3	2	–	1	–	1	1	–	1	–	2
CLO2	3	2	–	1	1	2	1	–	–	–	1
CLO3	3	3	–	2	1	2	2	–	–	–	1
CLO4	2	1	–	3	2	2	2	1	–	1	2
CLO5	1	3	1	1	–	1	3	1	2	1	2
CLO6	2	3	2	1	–	1	3	2	2	2	3



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Values to CLO-PLO matrix are assigned by **judging the importance of the particular CLO** in relation to the PLOs.

CLO – PLO correlation	Value
Strong	3
Moderate	2
Low	1
No correlation	-

- **Suggested Learning Materials Books:**

1. Electronics Principle: A.P. Malvino
2. Op Amps and Linear Integrated Circuits: Ramakant Gayakwad, PHI 3rd Edition 1993.
3. Integrated electronics: Millman & Halkies, McGraw Hill, 9th reprint, 1995.



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
DSC	P2S01NCELC02	Signal & System	3-0-1	120	04

- Course Learning Outcomes (CLOs)** On completion of this course, students will be able to:

CLO 1:.	In this course, students will be learning about the electronics instrument which were used in our day to-day life.
CLO 2:.	To understand the basics of signals and transmission of various signal through encryption and decryption techniques applications will be introduced.
CLO 3:.	To improve scientific attitude and to give emphasis on the development of experimental skills, data analysis, calculations, and also on the limitations of the experimental method and data as well as results obtained.

Unit	Course Content	Learning Pedagogies*	CLO(s)
I	Signals, Systems & Signal Processing, Classification of signals, the concept of frequency in continuous time and discrete time signals, sampling theorem.	CL, Seminars, Inquiry-Based Learning	CLO1, CLO2
II	Discrete-time signals, sequences, Discrete time systems, Block diagram representation, Classification, Convolution representation of LTI systems, Analysis of Discrete time systems described by difference equations (except particular solution).	CL, PBL, ICT-Enabled Learning	CLO3
III	Z Transform, Properties of Z transform, Rational Z Transform, Inverse Z transform, Transfer function representation, Analysis of LTI systems in Z domain, Transient & steady state response, Causality & Stability	CL, ICT-enabled learning,	CLO4
IV	Frequency Analysis of continuous time signals, Frequency analysis of discrete time signals, Fourier series and Power density spectrum of discrete time periodic signal. Fourier transform and Energy density spectrum of discrete time aperiodic signals. Relationships of the Fourier transform to the Z transform Frequency domain classification and concept of bandwidth.	CL, Seminars, CBL, Mini Projects	CLO5, CLO6



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Assessment Methodologies

(D) Internal Assessment

a. Internal Formative assessment

- (d) MCQ and Objective question Quiz
- (e) Seminar/Presentation and Group Discussion
- (f) Assignments

b. Internal Summative Assessment

- (a) Mid-term tests

(E) Weightage of Learning Efforts for External Assessment

Unit	Aligned CLOs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/ Analyse & above (A)	
I	CLO1, CLO2	30	3	3	8	14
II	CLO3	30	3	3	8	14
III	CLO4	30	2	2	7	11
IV	CLO5, CLO6	30	2	2	7	11
		120	10	10	30	50

Assessment and Evaluation

Sr. No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	Seminars, Assignments, Quizzes, Mid Term Test, Class Regularity, Group Discussion	50
2	End-Semester Examination	Written Exam	50

(F) CLOs – PLOs Matrix

CLO	PLO										
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CLO1	3	2	–	1	–	1	1	–	1	–	2
CLO2	3	2	–	1	1	2	1	–	–	–	1
CLO3	3	3	–	2	1	2	2	–	–	–	1
CLO4	2	1	–	3	2	2	2	1	–	1	2
CLO5	1	3	1	1	–	1	3	1	2	1	2
CLO6	2	3	2	1	–	1	3	2	2	2	3



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Suggested References:

- | Sr. No. | References |
|---------|---|
| 1. | Introduction to Signals and Systems: Edward W. Kamen, Macmillan Pub. Co., New York. |
| 2. | Signals & Systems: continuous and discrete: Rodger E. Zimer, Maxwell Macmillan International (1990), Second edition. |
| 3. | Digital Signal Processing : Principles, Algorithms, and Applications: John G Proakis & Dimitris G Manolakis, Prentice Hall India, 3rd edition |

On-line Resources:

<https://www.electronics-tutorials.ws/>

<https://www.electronicshub.org/tutorials/>

www.allaboutcircuits.com



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
DSC	P2S01NCELC03	8 Bit Microcontroller and Applications	3-0-1	120	04

• Course Learning Outcomes (CLOs)

On completion of this course, students will be able to:

CLO 1:.	Students will be able to explain the fundamentals of microcontrollers and embedded systems, including the distinction between microprocessors and microcontrollers, and describe the architecture and memory organization of the 8051.
CLO 2:.	Students will develop assembly programming skills for the 8051, applying addressing modes and instruction categories to write and execute programs for data transfer, arithmetic, logical, branch, and bit manipulation operations.
CLO 3:.	Students will configure and implement system functions using timers, counters, interrupts, and serial communication, including waveform generation and interrupt-driven data transfer.
CLO 4:.	Students will connect the concept of binary logic in Pingala's prosody to modern digital systems, demonstrating how recursive generation of meters parallels binary counting and coding in microcontrollers
CLO 5:.	Students will design and execute interfacing applications with the 8051, connecting it to LEDs, switches, LCDs, ADCs, and motors, and apply lab-based programming for control applications.

Unit	Course Content	Learning Pedagogies*	CLO(s)
I	8051 Microcontroller: Microprocessor Vs Microcontroller, Embedded Systems, Embedded Microcontrollers, 8051 Architecture- Registers, Pin diagram, I/O ports functions, Internal Memory organization. Interfacing Concept: Design of Address decoder circuit and control signal generation. External Memory (ROM & RAM) interfacing.	Classroom Lecture (CL), Seminars (Student-led and Faculty-moderated), Inquiry-Based Learning	CLO1, CLO2



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

II	8051 Instruction Set: Addressing Modes, Data Transfer instructions, Arithmetic instructions, Logical instructions, Branch instructions, Bit manipulation instructions. Simple Assembly language program examples to use these instructions.	CL, PBL, ICT-Enabled Learning (LMS-based Tasks, Digital Resources, Virtual Labs/Webinars)	CLO3, CLO4
III	8051 Timers and Counters :Operation and Assembly language programming to generate a pulse using Mode-1 and a square wave using Mode-2 on a port pin. 8051 Serial Communication- Basics of Serial Data Communication. 8051 Interrupts, 8051 Assembly language programming to generate an external interrupt	CL, ICT Enabled Learning, CBL	CLO5
IV	Interfacing 8051 to LED's, Switches, LCD, ADC-0804, DC Motor and Stepper motor with Assembly language programming.	CL, Seminars, CBL, Micro-Projects/Mini Research Tasks	CLO6

• Assessment Methodologies

(A) Internal Assessment

a. Internal Formative assessment

- MCQ and Objective question Quiz
- Seminar/Presentation and Group Discussion
- Assignments

b. Internal Summative Assessment

- Mid-term test

(B) Weightage of Learning Efforts for External Assessment

Unit	Aligned CLOs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/ Analyse & above (A)	
I	CLO1, CLO2	30	3	3	8	14
II	CLO3, CLO4	30	3	3	8	14
III	CLO5	30	2	2	7	11
IV	CLO6	30	2	2	7	11
		120	10	10	30	50



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

• Assessment and Evaluation

Sr.No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	Seminars, Assignments, Quizzes, Mid Term Test, Class Regularity, Group Discussion	50%
2	End-Semester Examination	Written Exam	50%

(C) CLOs – PLOs Matrix

CLO	PLO										
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CLO1	3	2	–	2	1	–	–	–	–	–	1
CLO2	3	2	–	2	1	1	–	–	–	–	1
CLO3	3	2	–	3	–	2	–	–	–	–	1
CLO4	3	2	–	3	–	3	1	–	–	–	1
CLO5	3	3	–	2	1	2	1	–	–	–	1
CLO6	3	2	–	3	–	3	2	–	–	–	1

Values to CLO-PLO matrix are assigned by judging the importance of the particular CLO in relation to the PLOs.

CLO – PLO correlation	Value
Strong	3
Moderate	2
Low	1
No correlation	-

Suggested References:

Sr. No.	References
1.	“The 8051 Microcontroller and Embedded Systems – using assembly and C”, Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D. McKinlay; PHI, 2006 / Pearson, 2006.
2.	“The 8051 Microcontroller”, Kenneth J. Ayala, 3rd Edition, Thomson/Cengage Learning.

On-line Resources:

<https://www.electronics-tutorials.ws/>

<https://www.electronicshub.org/tutorials/>

www.allaboutcircuits.com



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
SKILL	P2S01NSELC01	Advanced Network Analysis	3-0-1	120	04

• Course Learning Outcomes (CLOs)

On completion of this course, students will be able to:

CLO 1:.	Apply fundamental circuit laws and network reduction techniques to analyze electrical networks.
CLO 2:.	Formulate and solve first- and second-order network equations in the time domain.
CLO 3:.	Use Laplace transform techniques to determine network response and system behavior.
CLO 4:.	Analyze and interpret network functions using poles, zeros, and frequency response.
CLO 5:.	Apply network theorems and two-port network parameters for solving complex circuits.
CLO 6:.	Evaluate frequency-domain characteristics of circuits using Fourier analysis and filter theory.

Unit	Course Content	Learning Pedagogies*	CLO(s)
I	Network elements: passive & active elements, linearity, bilateral/unilateral networks, Network variables and laws: KCL, KVL, Network reduction: series-parallel, star-delta transformation Source transformation, Mesh and nodal analysis (including matrix formulation) Transient analysis of R, L, C circuits, First-order circuits (RL, RC): natural and step response, Second-order circuits (RLC): underdamped, overdamped, critically damped response, Initial and final value conditions	Classroom Lecture (CL), Seminars (Student-led and Faculty-moderated), Inquiry-Based Learning	CLO1, CLO2
II	Laplace transform: definition, properties, ROC Initial and final value theorems, Inverse Laplace (partial fractions, convolution) Application to circuit analysis, Concept of system function Poles and zeros and their significance Network functions: impedance, admittance, transfer functions Stability criteria (basic concept), Frequency response from Laplace domain	CL, PBL, ICT-Enabled Learning (LMS-based Tasks, Digital Resources, Virtual Labs/Webinars)	CLO3, CLO4



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

III	Network theorems: Superposition, Thevenin and Norton, Maximum Power Transfer, Reciprocity, Millman's theorem Two-port networks: Z, Y, h, ABCD parameters, Conversion between parameters, Interconnection of two-port networks (series, parallel, cascade) Network topology: Graph theory basics, Trees, links, loops, cut-sets, Incidence matrix	CL, ICT Enabled Learning, CBL	CLO5
IV	Sinusoidal steady-state analysis Resonance in RLC circuits (series and parallel) Quality factor and bandwidth Passive filters: Low-pass, high-pass, band-pass, band-stop, Filter characteristics Attenuators and equalizers Fourier series: Trigonometric and exponential forms, Convergence conditions Fourier transform and properties Application to network analysis	CL, Seminars, CBL, Micro-Projects/Mini Research Tasks	CLO6

• Assessment Methodologies

(D) Internal Assessment

a. Internal Formative assessment

- (d) MCQ and Objective question Quiz
- (e) Seminar/Presentation and Group Discussion
- (f) Assignments

b. Internal Summative Assessment

- (b) Mid-term test

(E) Weightage of Learning Efforts for External Assessment

Unit	Aligned CLOs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/Analyse & above (A)	
I	CLO1, CLO2	30	3	3	8	14
II	CLO3, CLO4	30	3	3	8	14
III	CLO5	30	2	2	7	11
IV	CLO6	30	2	2	7	11
		120	10	10	30	50



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

• Assessment and Evaluation

Sr.No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	Seminars, Assignments, Quizzes, Mid Term Test, Class Regularity, Group Discussion	50%
2	End-Semester Examination	Written Exam	50%

(F) CLOs – PLOs Matrix

CLO	PLO										
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CLO1	3	2	–	2	1	–	–	–	–	–	1
CLO2	3	2	–	2	1	1	–	–	–	–	1
CLO3	3	2	–	3	–	2	–	–	–	–	1
CLO4	3	2	–	3	–	3	1	–	–	–	1
CLO5	3	3	–	2	1	2	1	–	–	–	1
CLO6	3	2	–	3	–	3	2	–	–	–	1

Values to CLO-PLO matrix are assigned by **judging the importance of the particular CLO** in relation to the PLOs.

CLO – PLO correlation	Value
Strong	3
Moderate	2
Low	1
No correlation	-

Suggested Learning Materials Books:

Sr.No.	Title	Author(s)	Edition / Year	Publisher
1.	Network Analysis	M.E. Van Valkenburg	3rd Edition	Prentice India, Hall of New Age
2.	Network Analysis and Synthesis	C.L. Wadhwa	Latest Edition	International Publishers
3.	Networks and Systems	D. Roy Choudhury	Latest Edition	New International Publishers
4.	Engineering Circuit Analysis	William H. Hayt, Jack E. Kemmerly, Steven M. Durbin	8th Edition	McGraw-Hill Education
5.	Circuit Theory	A. Chakrabarti	Latest Edition	Dhanpat Rai & Co.



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
DSC	P2S01NCELC04	Practicals	0-8-1	120	04

- Course Learning Outcomes (CLOs) On completion of this course, students will be able to:

- CLO1: Design and simulate digital circuits, predict expected outputs, implement in hardware, and analyze performance by comparing experimental results with theoretical and simulated outcomes.
- CLO2: Write, simulate, and debug microcontroller assembly language programs, predict functional behavior, implement interfacing tasks, and validate results through execution and analysis.
- CLO3: Perform experiments to measure semiconductor device characteristics, predict behavior using theory and analyze results to extract parameters and explain deviations.
- CLO4: Explain working principles, predict instrument response, perform experiments using analytical and measuring instruments, and evaluate performance through observed results.
- CLO5: Engage in pre-lab design and simulation, implement systems systematically, and ensure safe, ethical, and environmentally responsible laboratory practices.
- CLO6: Critically analyze experimental data by comparing hardware, simulation, and theoretical results, explain discrepancies, and communicate findings through structured technical reports.

Unit	List of Suggested Practicals	Learning Pedagogies*	CLO(s)
I-IV	Experiments based on Semiconductor Devices, subject Code P2S01NCELC01: Analog Interface Electronics & Experiments based on Matlab subject Code P2S01NCELC02: Signal and System	Classroom Lecture (CL), Seminars (Student-led and Faculty-moderated), Inquiry-Based Learning	CLO1, CLO6

- Assessment Methodologies

(A) Internal Assessment

a. Internal Formative assessment

- Performance of Experiment and Execution
- Writing of Laboratory Journal and Technical Documentation
- Viva Voce Assessment



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

b. Internal Summative Assessment

(a) Mid-term test

(B) Weightage of Learning Efforts for External Assessment

Unit	Aligned CLOs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/ Analyse & above (A)	
I	CLO1 - CLO6	120	10	10	30	50
		120	10	10	30	50

• Assessment and Evaluation

Sr.No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	• Experimental Performance and Execution • Results Reporting and Technical Documentation • Viva Voce Assessment • Laboratory Conduct and Practices • Regularity and Active Participation • Group Discussion and Collaborative Learning	50%
2	End-Semester Examination	Experimental Performance, Analysis, Reporting of Readings, and Conceptual Understanding	50%

Suggested Learning Materials:

- Lab Manuals
- Textbooks of respective course
- Simulation Tools
- Virtual Lab/NPTEL videos with facility for projection
- Hardware Setup
- Computer and Printer Set up for documentation and graphs



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
DSC	P2S01NCELC05	Practicals	0-8-1	120	04

•Course Learning Outcomes (CLOs) On completion of this course, students will be able to:

- CLO1: Design and simulate digital circuits, predict expected outputs, implement in hardware, and analyze performance by comparing experimental results with theoretical and simulated outcomes.
- CLO2: Write, simulate, and debug microcontroller assembly language programs, predict functional behavior, implement interfacing tasks, and validate results through execution and analysis.
- CLO3: Perform experiments to measure semiconductor device characteristics, predict behavior using theory and analyze results to extract parameters and explain deviations.
- CLO4: Explain working principles, predict instrument response, perform experiments using analytical and measuring instruments, and evaluate performance through observed results.
- CLO5: Engage in pre-lab design and simulation, implement systems systematically, and ensure safe, ethical, and environmentally responsible laboratory practices.
- CLO6: Critically analyze experimental data by comparing hardware, simulation, and theoretical results, explain discrepancies, and communicate findings through structured technical reports.

Unit	List of Suggested Practical's	Learning Pedagogies*	CLO(s)
I-IV	Project based on C- Language	Laboratory Work, Viva Voce (Student-led and Faculty-moderated), Inquiry-Based Learning	CLO1-CLO6

• Assessment Methodologies

(C) Internal Assessment

a. Internal Formative assessment

- Performance of Experiment and Execution
- Writing of Laboratory Journal and Technical Documentation
- Viva Voce Assessment



SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

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

Master of Science Electronics and Communication Semester-I

b. Internal Summative Assessment

(a) Mid-term test

(D) Weightage of Learning Efforts for External Assessment

Unit	Aligned CLOs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/ Analyse & above (A)	
I	CLO1 - CLO6	120	10	10	30	50
		120	10	10	30	50

• Assessment and Evaluation

Sr.No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	• Experimental Performance and Execution • Results Reporting and Technical Documentation • Viva Voce Assessment • Laboratory Conduct and Practices • Regularity and Active Participation • Group Discussion and Collaborative Learning	50%
2	End-Semester Examination	Experimental Performance, Analysis, Reporting of Readings, and Conceptual Understanding	50%

Suggested Learning Materials:

- Lab Manuals
- Textbooks of respective course
- Simulation Tools
- Virtual Lab/NPTEL videos with facility for projection
- Hardware Setup
- Computer and Printer Set up for documentation and graphs