



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25)
Syllabus with effect from the Academic Year 2022-2023

(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (IIIrd)

Course Code	US03CELE51	Title of the Course	ELECTONICS DEVICES
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	The objective of the course to make the student understand the construction and functioning of various semiconductor devices and their analysis.
--------------------	--

Course Content		
Unit	Description	Weightage* (%)
1.	Electronics components: Passive components, Resistor :- fixed resistor ,variable resistor Capacitor:- Mica capacitor, variable capacitor Inductor: - Air core, iron core, ferrite core. Active components and its lead identification.	25%
2.	Electronics components & PN junction diode: Step response of RL circuits, Step response of RC circuits, introduction to PN junction diode , p – type semiconductor ,n – type semiconductor The PN junction reverse bias, PN junction forward bias, temperature.	25%
3.	Diode and its application: .Peak rectifier ,voltage doubler ,diode clamper ,diode limiter ,half wave rectifier ,full wave rectifier ,capacitor filtering using full wave rectifier , Amplitude modulation:- definition and derivation ,amplitude modulation methods ,square law diode modulator ,amplitude demodulation using diode.	25%
4.	Special types of diode : Voltage variable capacitor diodes, thermistor ,tunnel diodes, tunnel diode reverse bias, tunnel diode forward bias and its characteristics, the charge couple device (CCD) ,storage of charge, transfer of charge, input and output arrangement.	25%

Teaching-Learning Methodology	Online and Board work
-------------------------------	-----------------------



P



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25))
Syllabus with effect from the Academic Year 2022-2023

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Ability to analyze PN junctions in semiconductor devices under various conditions.
2.	Ability to design and analyze different electronic circuits.
3.	Ability to understand the behaviour of special purpose devices.
4.	Ability to design and analyze simple BJT and MOSFET circuits.

Suggested References:	
Sr. No.	References
1.	Electric Engineering Fundamentals By Vincent Deltoro (2 nd Edition)
2.	Electronics Devices and Circuit By David Bell.
3.	Digital Integrated Electronics By Herbert Taub, Donald Schelling
4.	Basic Electronics by Bhargava.

On-line resources to be used if available as reference material	
On-line Resources	



2



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25)
Syllabus with effect from the Academic Year 2022-2023

(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (IIIrd)

Course Code	US03CELE52	Title of the Course	Instrumentation & Digital Electronics.
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	The objective of the course is to make students understand the basic concept of digital electronics and its various building blocks and also helps to understand the concepts of accuracy, precision and types of errors and functioning of the CRO.
--------------------	--

Course Content		
Unit	Description	Weightage* (%)
1.	Errors and oscilloscope : Definition:- Accuracy and Precision, Types of errors :- Gross errors, Systematic errors, Random errors, Statistical analysis, Probability of errors, Limiting errors, Oscilloscope block diagram, Electrostatic focusing, Electrostatic deflection.	25%
2.	Number System: Various number system – Decimal, Binary Octal and Hexadecimal, Their interconversion and arithmetic, Binary arithmetic in computer, Negative number representation, 1's complement and 2's complement methods.	25%
3.	BCD Codes : Types of BCD codes, BCD addition, Weighted binary codes, Non – Weighted binary codes, Excess 3 codes, Excess 3 addition, Excess 3 subtraction, Gray codes, binary to gray and gray to binary conversion.	25%
4.	Boolean Algebra : Introduction to Boolean algebra, Logic operation and logic gates: AND, OR, NOT, Positive and Negative logic system, Universal building blocks NAND and NOR, Boolean laws, Demorgan's theorem, Reduction of Boolean expressions using Boolean laws, Karnaugh map minimization upto 4 variables, SOP methods, Pos methods, NAND and NOR minimization.	25%

Teaching-Learning Methodology	Online and Board work
-------------------------------	-----------------------

Evaluation Pattern





SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25)
Syllabus with effect from the Academic Year 2022-2023

Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	After completing the course the students acquire the basic knowledge of digital logic levels and can apply their of knowledge to understand digital electronics circuits.
2.	The students can do the analysis and design of various digital electronics circuits.
...	

Suggested References:	
Sr. No.	References
1.	Modern Electronics Instrumentation & Measurement Techniques By A.D. Helfreick & W.D. Cooper
2.	Digital Electronics By William Gothmann

On-line resources to be used if available as reference material
On-line Resources





SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25)
Syllabus with effect from the Academic Year 2022-2023

(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (IIIrd)

Course Code	US03CELE53	Title of the Course	PRACTICAL
Total Credits of the Course	4	Hours per Week	8

Course Objectives:	After studying this course the students the able to understand the functioning of different analog and digital circuits and they are also able to make use of the CRO for different applications.
--------------------	---

Course Content		
Unit	Description	Weightage* (%)
1.	Use of CRO.	10%
2.	Phase angle Using CRO.	10%
3.	Step response of RC circuit.	10%
4.	UJT characteristics.	10%
5.	UJT Oscillator.	10%
6.	Logic Gates using discrete components	10%
7.	Logic Gates Using ICs.	10%
8.	Universal Gates.	10%
9.	To study ALU.	10%
10.	Reduction of Boolean expression.	10%

Teaching-Learning Methodology	Online and Board work
-------------------------------	-----------------------

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce.	15%





SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25)
Syllabus with effect from the Academic Year 2022-2023

	Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	The practical course helps the students to understand the functioning of the Various semiconductors devices and their use in different electronics circuits.

Suggested References:	
Sr. No.	References
1.	
2.	
3.	

On-line resources to be used if available as reference material
On-line Resources

