(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (4^{th})

Course Code	US04CELE51	Title of the Course	ELECTRONIC DEVICES & APPLICATIONS
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	In this course the students understand the basic working of electronic devices .ie BJT,FET & Opto-electronic ie solar cell, LCD.etc and learn its various applications .

Course Content		
Unit	Description	Weightage* (%)
1.	**Field Effect Transistor &FET Biasing Circuits** :- **Decibel and frequency response, N& P channel JFET., Characteristics of JFET, Parameters of JEFT, DC Load line & bias point, fixed voltage bias circuit.**	25%
2.	**MOSFET & FET:** **Self bias, Potential divider bias circuits, JFET Voltage amplifier, FET Amplification, enhancement MOSFET, Depletion - enhancement - MOSFET, biasing MOSFETS..**	25%
3.	**FET Circuits :-** **Common source circuit and its ac equivalent circuit, complete ac equivalent circuit** **Common drain circuit and its ac equivalent circuit, complete ac equivalent circuit,** **Common gate circuit and' its ac equivalent circuit ,complete ac equivalent circuit..**	25%
4.	***Opto-electronic Devices :-*** **Light units, Photo-multiplier tube, Photo-conductive cell, Light - emitting diode, Photo-diode, solar-cell, Photo-transistors, photo-Darlington, Liquid crystal display, Opto-electronics couplers, seven-segment display**	25%

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, 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.	Helps to understand the concept of Electronic & Optoelectronic devices.
2.	Make students understand various issue related to BJT & FET as an amplifier ,and application of Optoelectronic devices in different types of Displays

Suggested References:	
Sr. No.	References
1.	Electric *engineering* fundamentals, Vincent Deltoro (2nd Edition.
2.	Electronics devices and circuit, David Bell.
3.	Digital integrated electronics, Herbert Taub, Donald Schelling.
4	Basic Electronics by Bhargawa.

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

*****

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

Course Code	US04CELE52	Title of the Course	Digital Electronics
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	The course is to make the students understand the various Logic families, various Flipflops and Counters and their applications.

Course Content		
Unit	Description	Weightage* (%)
1.	**Logic Families and XOR-XNOR Gates applications:** Logic Specifications, TTL Logic Family, XOR-XNOR Gates and their applications, Parity Checker, Code Convertor, Controlled Inverter, Comparator, Half and Full Adder, Half and Full Subtractor.	25%
2.	**Flip Flops, Multivibrators and their applications:** RS Flip Flop, Clocked R S Flip Flop, D Flip Flop, Edge Triggered D Flip Flop, J K Flip Flop, JK Master/Slave Flip Flop, Introduction to Multivibrators, Schmitt Trigger, Astable multivibrator and Monostable multivibrator.	25%
3.	**Counters:** Binary Ripple Counter, Asynchronous Counter 3 Bit, Mod -5,6 and 7, Synchronous Counter Mod 6,7and 8, Combinational Counter Mod S Advantages and Disadvantages of various Counters	25%
4.	**Applications of Counters:** Binary Decade Counter, Decoding Gates, Decoding Waveforms, BCD Counter, Up/Down Counter, Shift Counter, Three stage shift counter.	25%

Teaching-Learning Methodology	Online and Board work

Evaluation Pattern		
Sr.	Details of the Evaluation	Weightage

No.		
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.	Learning this syllabus student will be able to learn about various logic families especially Transistor -Transistor Logic (TTL) and the specifications associated with it such as FAN-in, FAN-out, Noise immunity and propagation delay. Also, various applications of X-OR and XNOR gates such as, Pairity Checker, Code Convertor, Controlled Inverter, Comparator, Half and Full Adder, Half and Full Subtractor.
2.	They will also learn about various Flip Flops such as RS Flip Flop, Clocked R S Flip Flop, D Flip Flop, Edge Triggered D Flip Flop, J K Flip Flop, JK Master/Slave. These flipflops are important fundamental blocks for construction of various Counters. Along with the Flipflops they will also learn about Multivibrators, For e.g. Schmitt Trigger, Astable multivibrator and Monostable multivibrator.
3.	The knowledge of Flipflop will be extended to learn about various counters such as Binary Ripple Counter, Asynchronous Counter 3 Bit, Mod -5,6 and 7, Synchronous Counter Mod 6,7and 8, Combinational Counter Mod 5. Also advanced counters with their applications in Binary Decade Counter, Decoding Gates, Decoding Waveforms, BCD Counter, Up/Down Counter, Shift Counter, three stage shift counter.

Suggested References:	
Sr. No.	References
1.	Digital Electronics by W. H. Gothmann
2.	Digital Principles and Applications by A. P. Malvino and D. P. Leach

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

*****

(Bachelor of Science) (B.Sc. (Electronics))
(B.Sc.) (Electronics) Semester (4^{th})

Course Code	US04CELE53	Title of the Course	PRACTICAL
Total Credits of the Course	4	Hours per Week	10

Course Objectives:	After studying this course the student are able to understand the functioning of different analog & digital circuits and they are also able to make different types of counter s and design FET biasing circuits.

Course Content		
Unit	Description	Weightage* (%)
1.	JFET Characteristics.	10%
2.	FET voltage amplifier c.	10%
3.	Fixed voltage biasing using FET/ BJT / MOSFET.	10%
4.	Self biasing. using FET/ BJT / MOSFET	10%
5.	Potential divider biasing using FET/ BJT / MOSFET	10%
6.	. XOR, XNOR gate applications	10%
7.	Half and Full Adder &. Half and Full substractor.	10%
8.	Flip-flops (RS, Clocked RS, D, JK Flip – flops).	10%
9.	Asynchronous counter (MOD 16, 8, 7)	10%
10.	Synchronous counter (MOD 16, 8, 7	10%

other experiments based on syllabus

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, 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.	The practical course helps the students to understand the biasing of FET, Various applications of flip-flops in different digital electronic circuits.

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

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

*****