Integrated Bachelor – Masters Programme

B.Sc.-M.Sc. (Electronics) Semester I

Course Code	IS01CELE51	Title of the Course	Analog and Digital Electronics -I
Total Credits of the Course	02	Hours per Week	02

Course Objective	To make students familiar with the (i) Fundamental concepts of Analog and Digital Electronics. (ii) Basics of Electronic Components and its measurement techniques. (iii) Number Systems. (iv) Basics of Digital Logic Gates. (v) Applications of Analog and digital circuits in Multidisciplinary areas.

Course Content		
UNIT	Description	Weightage* %
1	Introduction to Electronic Circuits - Power Sources - AC and DC Supply - Basic Electronic Components - Resistors, Capacitors, Inductors and Diodes : Types and Classification, Connection and Colour codes of Resistors and Capacitors, Junction Diodes – PN Junction Diode, Zener Diode : Construction, Working Principle, Characteristics, Parameters and Specifications– Bipolar Junction Transistor (BJT) : Types, Operation, Characteristics.	50
2	Introduction of Digital systems – Logic Levels – Number Systems : Decimal, Binary, Octal, Hexadecimal, BCD – Methods of Base Conversions and Arithmatic Operations – Logic Gates and its operations: AND Gate, OR Gate, NOT Gate - Universal Gates : NAND Gate, NOR Gate – Exclusive-OR (X-OR) Gate, Exclusive-NOR (X-NOR) Gate - Pulsed Operation of Logic gates – Laws of Boolean Algebra –De Morgan's theorem – Boolean Expressions and Logic Diagrams	50

Teaching-Learning Methodology	Traditional Classroom teaching with use of Multimedia facility in the classroom. Use of Computer Tool for live demonstration Problem / design based approach. Question-Answer and evaluation through Assignments

Evaluation Pattern		
Sr. No	Details of Evaluations	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 R6.8.3)	15%
3	University Examination	70%

Course Outcome. Having completed this course, the learner will be able to	
1	Understand basic concepts of Electronic circuits and digital systems.
2.	Identify the basic discrete electronic components.
3.	Know the Measurement and use of basic components.
4.	Analyze basic digital circuits.

Suggested References:	
Sr. No.	References
1	Integrated Circuits K.R.Botkar, Khanna Publishers
2	Electronic Principles Malvino,McGraw Hill Publishers.
3	Basic electronics Sadasiva Biswal, Atlantic Publication.
4	Basic Electronics D.P.Kothari, I.J.Nagrath, McGraw Hill Education Private Limited
5	Electronic Devices and Circuits David A.Bell, Oxford University Press.
6	Fundamentals of Digital Circuits A.Anandkumar, Prentice hall of India, New Delhi
7	Digital Principles and Applications Donald Leach, A.P.Malvino, Tata McGraw Hill Publication

8	Digital Logic and Computer Design M.Morris Mano, Pearson India Education Pvt.Ltd.
9	Digital Electronics :Principles and Integrated Circuits Anil K.Maini, Wiley India Pvt.Ltd.
10	Digital Principles and Circuits C.B.Agrawal, Himalaya Publishing House

On-line resources to be used if available as reference material
On line resources:
1. https://swayam.gov.in/
2. https://blog.mide.com/how-electronic-components-work
3. https://www.electronicshub.org/basic-electronic-components/
4. https://www.build-electronic-circuits.com/basic-electronic-components/