Course Name:	**Computer Programming**	
Course Code:	**CS-101**	
Course Type:	**Core**	
Contact Hours/Week: **3L**		Course Credits: **03**

Course Objectives

- To introduce the concept of computer fundamentals and computer programming
- To enable the student to design algorithms
- To enable the students to understand "C" language and its application in problem solving

Unit Number	Course Content	Lectures
UNIT-01	**Programming Fundamentals**: Introduction to computer, block diagram and organization of computer, number system and binary arithmetic, processing data, hardware, software, firmware, types of programming language-Machine language, Assembly level language, higher level language, source file, object file, translators-assembler, compiler, interpreter. Evolution and classification of programming languages.	08L
UNIT-02	**Programming Techniques:** Steps in program development, algorithm, flowchart, pseudo code.	05L
UNIT-03	**C Language:** 'C' character set, literals, keywords, identifiers, data types and size, variable declaration, expression, labels, statements, formatted input output statements, types of operators, data type conversion, mixed mode arithmetics, control structures.	07L
UNIT-04	**Data Structures**: Storage classes, scope rules and visibility, arrays, pointers, dynamic storage allocation, structures and unions, self-referential structures. Relationship between pointers and arrays, dynamic arrays: Introduction to dynamic datastructures-linked lists, stack, and binary trees.	08L
UNIT-05	**Functions and File Handling**: 'C' functions, library functions, parameter passing, recursion, 'C' files, function for file handling, 'C' pre-processors and command line arguments, macros and conditional compiler directives.	08L

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1:   Know the basic components of the computer and working of each device
CO2:   Design algorithms and flowcharts
CO3:   Understand the fundamentals of C programming
CO4:   Use suitable data structure for problem solving

Books and References

1.   C Programming Language by Briain W. Kenigham and Dennis Ritchie, Prentice Hall of India.
2.   Programming with C by Byron Gottfried, Tata McGraw Hill.
3.   The Complete Reference C by Herbert Schildt, Tata McGraw Hill.
4.   Let us C by Yashwant Kanetkar, BPB Publication.
5.   A Structured Programming Approach in C by B.A. Forouzan and R.F. Gilberg, Cengage Learning.

Course Name:	**Basic Electronics Engineering**	
Course Code:	**EC-101**	
Course Type:	**Core**	
Contact Hours/Week: **3L**		Course Credits: **03**

Course Objectives

- To understand the fundamentals of semiconductor Physics.
- To introduce the concepts of semiconductor devices with applications.
- To enable the students to understand the working and applications of transistor.
- To understand the basics of JFET and MOSFET.
- To understand the basics of communication systems.

Unit Number	Course Content	Lectures
UNIT-01	**Semi-Conductors and Diodes:** Introduction, Insulators, Semiconductors and Metals, Mobility and Conductivity, Intrinsic and Extrinsic Semiconductors, Charge Density, Current Components in Semiconductors, Continuity Equation, PN Junction Diode- Characteristics and Analysis; Types of Diodes- Zener Diode, Photodiodes, LED, Varactor Diode, Tunnel Diodes.	**06L**
UNIT-02	**Diode Applications:** Rectifiers and Filter Circuit: Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier and their Analysis, L,C and Pi Filters; Series and Shunt Diode Clippers, Clipping at Two Independent Levels, Clamping Operation, Clamping Circuit; Practical Clamping Circuits, Basic Regulator Supply using Zener Diode.	**07L**
UNIT-03	**Bipolar Junction Transistors:** Construction and Characteristics of BJT, Transistor Configuration: CB, CE, CC Configuration; Transistor at Low Frequency, Small Signal Low Frequency Transistor Model (H-Parameters), Analysis of Transistor Amplifier using H-Parameters.	**06L**
UNIT-04	**Transistor Biasing:** Transistor Biasing and Bias Stabilization: Operating Point, Stability Factor, Analysis of Fixed Bias, Collector to Base Bias, Emitter Resistance Bias Circuit and Self Bias Circuit, Bias Compensation Techniques Transistor Switch and Transistor amplifier.	**05L**
UNIT-05	**Field Effect Transistor:** Construction and Characteristics of JFET, JFET Biasing Circuit, JFET Amplifier, MOSFET Construction and Characteristics.	**06L**
UNIT-06	**Basics of Communication System:** Introduction to Analog and Digital Communication Systems, Block Diagram Representation of Communication System, Basic idea of Transmitter and Receiver used for radio communication, Various Frequency bands used for Communication, Need of Modulation and Introduction to Cellular Communication.	**06L**

Course Outcomes

Upon successful completion of the course, the students will be able to

CO1:   Acquire basic knowledge on the working of various semiconductor devices

CO2:   Know about the working principles of transistor with its different configurations which are helpful to design analog and digital applications

CO3:   Understand the biasing requirements and circuits in BJT and FET

CO4:   Develop analytical capability in designing of BJT and FET based circuits

CO5:   Understand the idea of information transmission through analog and digital communication systems

Books and References

1. Integrated Electronics by J. Millman and C.C. Halkias, McGraw Hill Education, India.
2. Electronics Devices and Circuit Theory by R. Boylestad and L. Nashelsky, Pearson India.
3. Electronics Devices and Circuits-II by U. A. Bakshi and A. P. Godse, Technical Publications.
4. Electronic principles by L. Malvino, Tata McGraw Hill Education.
5. Semiconductor Devices by K. Kano, Prentice Hall Publication.
6. Electronic Communication Systems by G. Kennedy, McGraw Hill Education, India.