



Course Title: Introduction to Computers and programming in C

Credit Units: 3

Course Level: UG

Course Code: ES 202

L	T	P/S	SW/F W	TOTAL CREDIT UNITS
2	-	2	-	3

Course Objectives: The objective of this course module is to acquaint the students with the basics of computers system, its components, data representation inside computer and to get them familiar with various important features of procedure-oriented programming language i.e. C. This Course guides the students to read, write and modify C programs and to implement basic projects.

Pre-requisites: Basic knowledge of Computers

Course Contents/Syllabus:

	Weightage (%)
Module I: Introduction	15
Introduction to computer, history, von-Neumann architecture, memory system (hierarchy, characteristics and types), H/W concepts (I/O Devices), S/W concepts (System S/W & Application S/W, utilities). Data Representation: Number systems, character representation codes, Binary, octal, hexadecimal and their interconversions. Binary arithmetic, floating point arithmetic, signed and unsigned numbers, Memory storage unit.	
Module II: Programming in C	20
History of C, Introduction of C , Basic structure of C program, Concept of variables, constants and data types in C, Operators and expressions: Introduction, arithmetic, relational, Logical, Assignment, Increment and decrement operator, Conditional, bitwise operators, Expressions, Operator precedence and associativity. Managing Input and output Operation, formatting I/O.	

Module III: Fundamental Features in C	
C Statements, conditional executing using if, else, nesting of if, switch and break Concepts of loops, example of loops in C using for, while and do-while, continue and break. Storage types (automatic, register etc.), predefined processor, Command Line Argument.	20
Module IV : Arrays and Functions	20
One dimensional arrays and example of iterative programs using arrays, 2-D arrays Use in matrix computations. Concept of Sub-programming, functions Example of userdefined functions. Function prototype, Return values and their types, calling function, function argument, function with variable number of argument, recursion	
Module V: Advanced features in C	25
Pointers, relationship between arrays and pointers Argument passing using pointers, Array of pointers. Passing arrays as arguments. Strings and C string library. Structure and Union. Defining C structures, Giving values to members, Array of structure, Nested structure, passing strings as arguments. File Handling.	

Course Learning Outcome: On completion of the course students will be able to

- Demonstrate the knowledge of Computer Science Basics
- Understand the basic programming constructs of C
- Apply Control Structures in C Programming Language
- Design applications using arrays and functions
- Create / manipulate data files and developing applications for real world problems.

Pedagogy for Course Delivery: The class will be taught using theory and lab method. Lab helps the students to generate the logic of assigned assignments. The course instructor will spend considerable time in understanding the concept of C Programming Language from the scratch and covers most of the programming structures of C Language. The course will cover the ways to think innovatively & liberally.
Tools Used: TURBO C.

Lab/ Practicals details, if applicable:

List of Experiments:

- Introduction to TURBO C IDE and Programming Environment.
- C Building Blocks
- Decision making the if and if-else structure
- Decision making the Switch case and conditional operator
- Loop Constructs in C Language
- Nested looping
- Functions in C-Language programming
- Arrays in C (single dimensional)
- Arrays in C (Multidimensional)
- Structures and Unions
- Pointers in C-Language
- Pointers with arrays and function
- File Handling in C-Language

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total
67	33	100

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment 40					End Term Examination
Components (Drop down)	Attendance	Mid Term Exam	Home Assignment	Class Quiz	
Weightage (%)	5	15	10	10	60

Lab/ Practical/ Studio Assessment:

Continuous Assessment/Internal Assessment 40					End Term Examination	
Components (Drop down)	Attendance	Lab Record	Performance	Viva	VIVA VOCE 30	PRACTICAL 30
Weightage (%)	5	10	15	10	60	

Text & References:**Text Books:**

- Yashwant Kanetkar, “Let us C”, BPB Publications, 2010.
- Byron S Gottfried, “Schaum’s Outlines- Programming with C, Mc Graw Hill, 2008.

Reference Books:

- E Balagurusamy , “Programming in ANSI C”, Tata McGraw Hill, Fifth Edition, 2010.
- Herbert Schildt, “C: The complete references”, Tata McGraw Hill, Fourth Edition, 2008
- Brain W. Kernighan, Dennis Ritchie, “C Programming Language”, The (ANSI C Version), PHI, 2nd Edition, 1988.