**CS104: Computer Programming]**

**Programme:** B.Tech. (CSE, CCE, ECE, MME) **Year:** First **Semester:** First

**Course:** Core **Credits:** 3 **Hours:** 40

**Course Context and Overview (100 words):**

Computer programming is the fundamental course for all branches of engineering. This course is designed for students who have had little or no prior experience with computer programming. This program of study is directed toward developing programming skills. The objective of the program is to enable students to learn the basics of computer programming and solve programming problems. In this course, C programming language is used as a vehicle.

**Prerequisites Courses:** NIL

**Course Outcomes (COs):**

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| **On completion of this course, the students will have the ability to:** |
| **CO1:** Understand the basic concepts of computers and programming. |
| **CO2:** Design solutions to engineering problems with the help of flow charts and develop programs using programming constructs, control structures, functions and structures. |
| **CO3:** Demonstrate familiarity with basic data structures and memory allocation mechanism. |
| **CO4:** Explain file handling concepts. |

**Course Topics**

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| **Contents** | **Lecture Hours** | |
| **UNIT – 1**  **Introduction to Computers and Computer Programming** |  | 6 |
| 1.1 Introduction to computer fundamentals, computer programming, algorithms and flow charts | 2 |
| 1.2 Program development, compilation & execution process | 1 |
| 1.3 Program constructs: keywords, data types, operators, expressions, storage classes | 2 |
| 1.4 Basic input and output handling | 1 |
| **UNIT –2**  **Control Structures** | | 6 |
| 2.1 Branching: if statement, if-else, nested if-else statements, conditional operators, switch | 3 |
| 2.2 Looping: for, while and do loops | 3 |
| **UNIT-3**  **Basic Data Structures** |  | 5 |
| 3.1 Arrays and associated operations | 3 |
| 3.2 Character arrays, strings and associated operations | 2 |
| **UNIT-4**  **Functions** |  | 7 |
| 4.1 User defined functions: prototype, definition, accessing | 3 |
| 4.2 Lifetime and scope | 1 |
| 4.3 Recursion | 1 |
| 4.4 Library functions | 1 |  |
| 4.5 Command line arguments | 1 |  |
| **UNIT-5**  **Memory Management in Programming** | | 7 |
| 5.1 Pointers in C | 2 |
| 5.2 Operations | 2 |
| * 1. 5.3 Handling arrays and strings | 2 |
| * 1. 5.4 Dynamic memory allocation | 1 |  |
| **UNIT-6**  **Structure and Files** | | 9 |
| 6.1 Declaration, definition and accessing | 3 |
| 6.2 Functions and structures | 2 |
| * 1. 6.3 Dynamic memory allocation of structures | 1 |
| * 1. 6.4 File Structure and File handling functions | 3 |

**Textbook references (IEEE format):**

**Text Book:**

1. Computer Science: A Structured Programming Approach Using C - Forouzan, B.A & Gilberg R. F.

**Reference books:**

1. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language, 2nd ed., Prentice Hall.
2. E. Balagurusamy, Programming in ANSI C, 4th ed., Tata McGraw-Hill Education.
3. Yashavant P. Kanetkar, Let Us C, 6th ed., Infinity Science Press, LLC.
4. Venugopal K R, Prasad S R, Mastering C, McGraw-Hill Education.

**Evaluation Methods:**

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| **Item** | **Weightage** |
| Mid Term | 25% |
| End Term | 50% |
| Quiz / Assignment | 25% |

**Prepared By:**

**Last updated on:** 18 August, 2016