

COMPUTER PROGRAMMING

CT 401

Lecture : 3

Tutorial : 0

Practical : 3

Year : I

Part : I

Course Objective:

To familiarize the student with computer software and high level programming languages and to develop the programming skills using C languages.

- 1. Overview of Computer Software & Programming Languages (3 hours)**
 - 1.1. System software
 - 1.2. Application software
 - 1.3. General software features and recent trends
 - 1.4. Generation of programming languages
 - 1.5. Categorization of high level languages
- 2. Problem Solving Using Computer (3 hours)**
 - 2.1. Problem analysis
 - 2.2. Algorithm development and Flowchart
 - 2.3. Compilation and Execution
 - 2.4. Debugging and Testing
 - 2.5. Programming Documentation
- 3. Introduction to ‘C’ programming (4 hours)**
 - 3.1. Character set, Keywords, and Data types
 - 3.2. Preprocessor Directives
 - 3.3. Constants and Variables
 - 3.4. Operators and statements
- 4. Input and Output (3 hours)**
 - 4.1. Formatted input/output
 - 4.2. Character input/output
 - 4.3. Programs using input/output statements
- 5. Control Statements (6 hours)**
 - 5.1. Introduction
 - 5.2. The goto, if, if... ..else, switch statements
 - 5.3. The while, do...while, for statements

- 6. User-Defined Functions (4 hours)**
 - 6.1. Introduction
 - 6.2. Function definition and return statement
 - 6.3. Function Prototypes
 - 6.4. Function invocation, call by value and call by reference, Recursive Functions
- 7. Arrays and Strings (5 hours)**
 - 7.1. Defining an Array
 - 7.2. One-dimensional Arrays
 - 7.3. Multi-dimensional Arrays
 - 7.4. Strings and string manipulation
 - 7.5. Passing Array and String to function
- 8. Structures (4 hours)**
 - 8.1. Introduction
 - 8.2. Processing a Structure
 - 8.3. Arrays of Structures
 - 8.4. Arrays within Structures
 - 8.5. Structures and Function
- 9. Pointers (4 hours)**
 - 9.1. Introduction
 - 9.2. Pointer declaration
 - 9.3. Pointer arithmetic
 - 9.4. Pointer and Array
 - 9.5. Passing Pointers to a Function
 - 9.6. Pointers and Structures
- 10. Data Files (5 hours)**
 - 10.1. Defining opening and closing a file
 - 10.2. Input/Output operations on Files
 - 10.3. Error handling during input/output operations
- 11. Programming Language: FORTRAN (4 hours)**
 - 11.1. Character set
 - 11.2. Data types, Constants and variables
 - 11.3. Arithmetic operations, Library Functions
 - 11.4. Structure of a Fortran Program
 - 11.5. Formatted and Unformatted Input/Output Statements
 - 11.6. Control Structures: Goto, Logical IF, Arithmetic IF, Do loops
 - 11.7. Arrays: one dimensional and two dimensional

CURRICULUM – BACHELOR’S DEGREE IN COMPUTER ENGINEERING

Practical:

- Minimum 6 sets of computer programs in C (from Unit 4 to Unit 10) and 2 sets in FORTRAN (from unit 11) should be done individually. (30 marks out of 50 marks)
- Student (maximum 4 persons in a group) should submit mini project at the end of course. (20 marks out of 50 marks)

References:

1. Kelly & Pohl, “**A Book on C**”, Benjamin/Cumming
2. Brian W. Keringhan & Dennis M. Ritchie, “**The ‘C’ Programming Language**”, PHI
3. Daya Sagar Baral, Diwakar Baral and Sharad Kumar Ghimire “**The Secrets of C Programming Language**”, Bhundipuram Publication
4. Bryons S. Gotterfried, “**Programming with C**”, TMH
5. Yashavant Kanetkar, “**Let Us C**”, BPB
6. Ram Datta Bhatta, Babu Ram Dawadi, “A textbook of C Programming”, Vidyarthi Pustak Bhandar
7. Krishna Kandel, “Learning C By Examples”, Shree Chandeshwori Publication
8. Alexis Leon, Mathews Leon, “**Fundamentals of Information Technology**”, Leon Press and Vikas Publishing House
9. C. Xavier, “**FORTAN 77 and Numerical Methods**”, New Age International (P) Limited
10. D. M. Etter, “**Structured Fortran & for Engineers and Scientist**”, The Benjamin/Cummings Publishing Company, Inc.
11. Rama N. Reddy and Carol A. Ziegler, “**FORTTRAN 77 with Applications for Scientists and Engineers**”, Jaico Publishing House

Evaluation Scheme

There will be questions covering all the chapters in the syllabus. The evaluation scheme for the question will be as indicated in the table below:

Chapter	Hours	Mark Distribution*
1,2	6	
3,4	7	
5	6	
6	4	
7	5	
8	4	
9	4	
10	5	
11	4	
Total	45	80

* There may be minor deviation in marks distribution.