**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR**
**ANANTHAPURAMU**

**I B.Tech. I - Semester**

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## (15A05101) COMPUTER PROGRAMMING
### (Common to All Branches)

**Objectives:**
- Understand problem solving techniques
- Understand representation of a solution to a problem
- Understand the syntax and semantics of C programming language
- Understand the significance of Control structures
- Learn the features of C language

**UNIT - I**

Overview of Computers and Programming - Electronic Computers Then and Now - Computer Hardware - Computer Software - Algorithm - Flowcharts - Software Development Method - Applying the Software Development Method.

Types, Operators and Expressions:   Variable Names - Data Types and Sizes - Constants - Declarations - Arithmetic Operators - Relational and Logical Operators - Type Conversions - Increment and Decrement Operators - Bitwise Operators - Assignment Operators and Expressions - Conditional Expressions - Precedence and Order of Evaluation.

**UNIT - II**

Selections Statements – Iteration Statements – Jump Statements- Expression Statements - Block Statements.

Single Dimensional Arrays – Generating a Pointer to an Array – Passing Single Dimension Arrays to Functions – Strings – Two Dimensional Arrays – Indexing Pointers – Array Initialization – Variable Length Arrays

**UNIT - III**

Pointer Variables – Pointer Operators - Pointer Expressions – Pointers And Arrays – Multiple Indirection – Initializing Pointers – Pointers to Functions – C's Dynamic Allocation Functions – Problems with Pointers.

Understanding the scope of Functions – Scope Rules – Type Qualifiers – Storage Class Specifiers-Functions Arguments –The Return Statement.

**UNIT - IV**

Command line arguments – Recursion – Function Prototypes – Declaring Variable Length Parameter Lists

Structures – Arrays of Structures – Passing Structures to Functions – Structure Pointers – Arrays and Structures within Structures – Unions – Bit Fields – Enumerations – typedef

**UNIT - V**

Reading and Writing Characters – Reading and Writing Strings – Formatted Console I/O – Printf - Scanf – Standard C Vs Unix File I/O – Streams and Files – File System Basics – Fread and Fwrite – Fseek and Random Access I/O – Fprintf ( ) and Fscanf( ) – The Standard Streams – The Preprocessor Directives #define and #include.

**Text Books:**
1. "The Complete Reference C"- Fourth Edition- Herbert Schildt- McGrawHill Eduction.
2. "The C Programming Language" Second Edition- Brain W. Kernighan- Dennis M. Ritchie- Prentice Hall-India. (UNIT- I)

**References:**
1. Programming in C, Second Edition – Pradip Dey, Manas Ghosh, Oxford University Press.
2. "C From Theory to Practice"- George S. Tselikis- Nikolaos D. Tselikas- CRC Press.
3. "Programming with C"- R S Bichkar- University Press.

4. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A.Ananda Rao, Pearson Education. (UNIT-I)
5. Computer Fundamentals and C Programming- Second Edition- P.Chenna Reddy- Available at Pothi.com ([http://pothi.com/pothi/book/dr-p-chenna-reddy-computer-fundamentals-and-c-programming](http://pothi.com/pothi/book/dr-p-chenna-reddy-computer-fundamentals-and-c-programming)).

**Outcomes:**
- Apply problem solving techniques in designing the solutions for a wide-range of problems
- Choose appropriate control structure depending on the problem to be solved
- Modularize the problem and also solution