B.Sc. (I.T.) / M.Sc. (I.T.) 2nd Semester

Course : 203 : Fundamentals of Programming using C - II

<table>
<tr><td>Course Code</td><td>203</td></tr>
<tr><td>Course Title</td><td>Fundamentals of Programming using C - II</td></tr>
<tr><td>Credit</td><td>4</td></tr>
<tr><td>Teaching per Week</td><td>4 Hrs</td></tr>
<tr><td>Minimum weeks per Semester</td><td>15 (Including Class work, examination, preparation, holidays etc.)</td></tr>
<tr><td>Last Review / Revision</td><td>June 2023</td></tr>
<tr><td>Purpose of Course</td><td>To teach advanced concepts of C language</td></tr>
<tr><td>Course Objective</td><td>To impart knowledge of structures, union, pointers, user defined functions, pre-processor directives and file management features of C language.</td></tr>
<tr><td>Course Outcomes</td><td>CO1 : Students will be able to learn advanced concepts of c programming like pointer , structure, union, etc.

CO2 : Students will be able to have the knowledge of file system and file management concepts with c language

CO3 : Students will be have ability to work on pre-processor</td></tr>
<tr><td>Mapping between COs with PSOs</td><td><table><tr><td></td><td>PSO1</td><td>PSO2</td><td>PSO3</td><td>PSO4</td><td>PSO5</td></tr><tr><td>CO1</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO2</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO3</td><td></td><td></td><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>Pre-requisite</td><td>Basic knowledge of problem solving and C programming.</td></tr>
<tr><td>Course Outcome</td><td>Students will be able to write programs using structures, union, pointers, user defined functions, pre-processor directives and file management in C language.</td></tr>
<tr><td>Course Content</td><td>Unit : 1 : Structure and Union
1.1 Structure
1.1.1 Declaring and Defining Structure elements
1.1.2 Structure Initialization
1.1.3 Structure assignment
1.1.4 Array of Structure, Array within a structure
1.1.5 Nested Structure
1.1.6 Size of Structure
1.2 Union

Unit : 2 : User Defined Functions
2.1 Introduction
2.2 Declaration and Definition
2.3 Methods of parameter passing
2.4 Scope of variables and storage classes
2.5 Recursion
2.6 Passing array to functions
2.7 Passing Structure, union to function

Unit : 3 : Pointer
3.1 Pointer Basics
3.2 Pointers and arrays
3.3 Chain of pointers</td></tr>
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	3.4 Pointer and character strings 3.5 Array of pointers, pointer to array 3.6 Pointer and functions 3.6.1 Call by value & call by reference 3.6.2 Passing array to a function using pointer 3.7 Pointer to structures 3.8 Issues with pointers 3.9 Dynamic memory allocation 3.9.1 Allocating a memory block 3.9.2 Allocating multiple blocks of memory 3.9.3 Altering the size of a block 3.9.4 Releasing used Space **Unit : 4 : File Management in C** 4.1 Introduction: Definition, File structure, concept of Record 4.2 File access modes: Sequential, random, binary, 4.3 File Operations 4.2.1 Creating a new file 4.2.2 Opening a file 4.2.3 Reading from a file 4.2.4 Writing to a file 4.2.5 Moving to a specific location in a file (Seek) 4.2.6 Closing a file 4.4 Error handling during I/O operations 4.5 Command Line Arguments **Unit : 5 : The Pre-processor** 5.1 Features of C Preprocessor 5.2 Macro 5.3.1 Macro Expansion 5.3.2 Macro with arguments 5.3.3 Nested Macro 5.3 File Inclusion 5.4 Conditional compilation 5.5 Compiler Control Directives
Reference Book	1 Programming in ANSI C : E. Balagurusamy - Tata McGraw Hill 2 Let us C : Yashwant Kanetkar - BPB Publications 3 Pointers in C : Yashwant Kanetkar - BPB 4 The complete Reference C : Herbert Schildt - McGrawHill 5 Programming with C : R S Bichkar - Universities Press 6 C Programming Language : Karnighan & Ritchie - TMH 7 Mastering Turbo C : Stan Kelly - BPB
Teaching Methodology	Discussion, Independent Study, Seminars and Assignment

P. M. Desai