

Core Course CC-108 Advanced C Programming

Course Introduction:

Students will be provided with advanced knowledge of C programming language. Features like functions, structures, files, pointers, dynamic memory allocation & preprocessors would be covered.

Objectives:

The students would be able

- 1) To obtain in depth knowledge of C language.
- 2) To understand advanced features of C Programming Language.

No. of Credits: 3

Theory Sessions per week: 4

Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
1	Functions	10 hours
	<ul style="list-style-type: none"> • User Defined Functions <ul style="list-style-type: none"> ○ Introduction ○ Elements of UDF 	3hrs
	<ul style="list-style-type: none"> • Categories of UDF <ul style="list-style-type: none"> ○ No argument no return value ○ Arguments but no return value ○ No argument but returns a value ○ Arguments with return value 	4 hrs
	<ul style="list-style-type: none"> ○ Recursion ○ Nesting Function ○ Variable Scope ○ Visibility and lifetime in function ○ Storage Classes 	3 hrs
2	Structures, Unions & Pointers	10 hours
	<ul style="list-style-type: none"> • Structures <ul style="list-style-type: none"> ○ Defining a structure ○ Accessing a structure variable ○ Operations on structure members ○ Copying and comparing variables ○ Arrays of structure ○ Arrays within Structures ○ Unions 	5 hrs
	<ul style="list-style-type: none"> • Pointer <ul style="list-style-type: none"> ○ Definition and Concept 	5 hrs

	<ul style="list-style-type: none"> ○ Advantage of using pointer ○ Pointer arithmetic 	
3	Advance Concept of Pointer & Link List	10 hours
	<ul style="list-style-type: none"> ● Pointer <ul style="list-style-type: none"> ○ Array of pointers ○ Pointers and Functions 	3 hrs
	<ul style="list-style-type: none"> ● Dynamic Memory Allocation <ul style="list-style-type: none"> ○ Memory Allocation Function ○ malloc() ○ calloc() ○ realloc() ○ free() 	2 hrs
	<ul style="list-style-type: none"> ● Link List <ul style="list-style-type: none"> ○ Concepts ○ Advantages ○ Overview of types of Link list ○ Operations on Singly Link List (create, display, insert at first, insert at last, delete at first, delete at last) ○ Application of Link list 	5 hrs
4	Files and Preprocessors	10 hours
	<ul style="list-style-type: none"> ● Files <ul style="list-style-type: none"> ○ Concepts of File Management ○ Files functions – fopen(), fclose(), fprintf(), fscanf(), fseek(), ftell(), rewind(), putc(), getc(), putw(), getw() ○ Error handling functions ○ Command line argument 	8 hrs
	<ul style="list-style-type: none"> ● Preprocessors <ul style="list-style-type: none"> ○ Types of Preprocessors ○ Macro substitution directives ○ File inclusion directives ○ Compiler control directives 	2 hrs

Textbook:

Programming In C (Second Edition)
Publication : Pearson Education
by Ashok N. Kamthane

Reference Book :

1. Simplifying C (First Edition 2010)
Publication : Dreamtech
by Harshal Arolkar and Sonal Jain

2. Programming in ANSI C (Fifth Edition 2011)
Publication : Mc Graw Hill
by Balagurusamy
3. Programming in C (First Edition 2011)
Publication : Oxford Higher Education
by Reema Thareja