48- Hours Hands on C Programming		
MODULE 1	**PROGRAMMING USING C (Level Intermediate)**	
Duration	**15 Hours**	
Lab	**Yes**	
Sr. N0.	**Topics / Subtopics**	**Hours**
1	**Introduction to C**	**8 Hour**
	Compilation Process	
	Variables, Datatypes, Arithmetic Operators	
	Working with TC Compiler	
	Sample Program	
Outcome:	***Students will be able to write and compile a single instruction program and exucte it on compiler***	
2	**Decision Control Statements**	**8 Hour**
	Relational, Logical Operators	
	Conditional, Compound Assignment Operators	
	if, if..else, switch	
Outcome:	***Students will be able to write and compile C programs using conditional statements***	
3	**Loop Control Statements**	**6 Hour**
	Loops : while, do-while, for	
	break, continue and goto	
	Nesting of Loops	
Outcome:	***Students will be able to write and compile C programs using looping statements***	
4	**Modular Programming using Functions**	**4 Hour**
	Declaration, Definition	
	Passing arguments to function	
	Storage classes	
	Storage classes specifiers	
Outcome:	***Students will be able to write C programs using modular approach also learn how to pass arguments in functions***	
5	**Preprocessor**	**4 Hour**
	File Inclusion	
	Macro Without Arguments	
	Macro With Arguments	
	Predefined Macros	
Outcome:	***Students will be able to design macros of 1 or 2 parameters in C langauage and execute them using compiler.***	
6	**Arrays**	**4 Hour**
	Declaration of Array	
	Accessing elements of array	
	Passing Array to Function	
	Searching Techniques - LS and BS	
	Multidimentional arrays - Matrix	
	Sorting Techniques - BS and SS	
Outcome:	***Students will be able to create programs for insertion deletion and to search an element from an array.***	
7	**Strings**	**4 Hour**

	Strings - Character Arrays	
	null character, string i/o	
	String and Character Library Functions	
	Implementing String Functions	
Outcome:	***Students will be able to create programs for string concatenation and manipulation***	
8	**Introduction to Pointers**	**4 Hour**
	What Is a Pointer?	
	Pointer Declarations	
	Arguments to Functions	
	Passing Arguments by Value	
	Passing Arguments by Address	
Outcome:	***Students will learn the and impliment the concept of call by reference.***	
9	**Pointer and Arrays**	**4 Hour**
	Relation between Pointer and Array	
	Pointer arithmetic operations	
	Evaluation	
Outcome:	***Students will perform the pointer address arithmetic.***	
10	**Structures**	**2 Hour**
	Structure Variable	
	Array of structure	
	Structure using pointers	
Outcome:	***Students will be able to write programs using array of structures***	
	Total No of sessions & hours	**48**

For Techno India NJR Institute of Technology
पंकज पोरवाल
Dr. Pankaj Kumar Porwal
(Principal)

48- Hours Hands on DSA Programming		
MODULE 2	**DSA USING C PROGRAMMING (Level Intermediate)**	
Duration	**15 Hours**	
Lab	**Yes**	
Sr. N0.	**Topics / Subtopics**	**Day/Session**
1	**Stack and Queue**	**12 Hours**
	General opertion on stack and Queue	_
	Implimentation of Queue using 2 stacks	_
Outcome :	***Students will be able to perform enqueue and dequeue operations on queue. (static memory allocation)***	
	Students will be able to perform push and pop operations on stack . (static memory allocation)	
2	**Linked List**	**10 Hours**
	Insertion at various postion in Linked List	_
	Deletion from various postion in Linked List	_
	Linked List arrangements	_
Outcome :	***Students will be able perform insertion deletion and to search an element from linked list.***	
	Students will be able create a program to reverse a singly linked list.	
3	**Stack Queue using Linked List**	**10 Hours**
	Implimentation of queue using Linked List	_
	Implimentation of stack using Linked List	_
Outcome :	***Students will be able to perform enqueue and dequeue operations on queue. (Dynamic memory allocation)***	
	Students will be able to perform push and pop operations on stack . (Dynamic memory allocation)	
4	**Double Ended Queue**	**2 Hours**
	Input resticted DEQueue	_
	Output restricted DEQueue	_
Outcome :	***Students will be able to perform enqueue and dequeue operations in double ended queue. (Dynamic memory allocation)***	
5	**Recursion**	**6 Hours**
	Classic problem of recursion TOH	_
Outcome :	***Students will be able to impliment the concept of recursion in the Tower of Hanoi problem.***	
6	**Trees**	**8Hours**
	Binary search tree	_
	Preorder, Inorder, Postorder Traversal	_
Outcome :	***Students will be able to impliment the Binary search tree and perform various Pre, In and post order terraversal.***	
	Total No of sessions & hours	**48**

Reference Material	Author
The C programming language	Dennis Ritchie
Data Structure	Seymour Lipschutz

Plateform	Dev Cpp, Turbo Cpp