



SIR PADAMPAT SINGHANIA UNIVERSITY
Udaipur

COURSE PLAN

Name of the Course Teacher(s) : Harish Tiwari / Ashutosh Gupta
Subject : Structured Programming Approach
Branch : All Semester: II Year: I
Course Code : CS-1001 L-T-P-C: 4-0-1 w.e.f. Jan 2020

Learning Objectives:

The objective of this course is to familiarize the logic of structured programming approach and to provide exposure in developing algorithm, flowchart and thereby writing efficient codes for user defined problem.

Learner will be able to illustrate the basic terminology used in computer programming, the concept of data types, variables and operators using C, design and Implement control statements and looping constructs in C, apply function concept on problem statements, demonstrate the use of arrays, strings, structures and files handling in C, demonstrate the dynamics of memory by the use of pointers to construct various data structures.

Lecture Plan

Sr. No.	Topics	Contact Hours (Lectures)
<i>Introduction to Computer, Algorithm and Flowchart: (06 Lectures)</i>		
1.	Basics of Computer: Turing Model, Von Neumann Model – CPU, Memory RAM, ROM,	1
2.	Basics of Positional Number System, Binary number, Binary arithmetic	2
3.	Introduction to Operating System and component of an Operating System.	1
4.	Algorithm & Flowchart : Three construct of Algorithm and flowchart: Sequence, Decision (Selection) and Repetition.	2
<i>Fundamentals of C Programming (07 Lectures)</i>		
5.	Character Set, Identifiers and keywords, Data types	1
6.	Constants, Variables. Operators: Arithmetic, Relational and logical, Assignment, Unary, Conditional, Bitwise, Comma, other operators.	3
7.	Expression, statements, Library Functions, Preprocessor.	1
8.	Data Input and Output: getchar(), putchar(), scanf(), printf(), gets(), puts(), Structure of C program .	2
<i>Control Structures (07 Lectures)</i>		
9.	Branching: If statement, If-else Statement, Multiway decision.	2
10.	Looping: while, do-while, for. Nested control structure:	3
11.	Switch statement	1

12.	Continue statement Break statement, goto statement.	1
Functions and Parameters (07 lecture)		
13.	Function: Introduction of Function, Function Main, Defining a Function, Accessing a Function, Function Prototype, Passing Arguments to a Function.	4
14.	Recursion.	1
15.	Storage Classes: Auto, Extern, Static, Register.	2
Arrays, String, Structure and Union (13 Lectures)		
16.	Array: Concepts, Declaration, Definition, Accessing array element, One-dimensional and Multidimensional array..	4
17.	String: Basic of String, Array of String, Functions in String.h.	3
18.	Structure: Declaration, Initialization, structure within structure, Operation on structures, Array of Structure. Union: Definition, Difference between structure and union, Operations on a union.	6
Pointer and File (12 Lectures)		
19.	Pointer :Introduction, Definition and uses of Pointers, Address Operator, Pointer Variables, Dereferencing Pointer, Void Pointer, Pointer Arithmetic, Pointers to Pointers, Pointers and Array, Passing Arrays to Function, Pointers and Function, Pointers and two dimensional Array, Array of Pointers.	8
20.	Dynamic Memory Allocation	1
21.	Files: Types of File, File operation- Opening, Closing, Creating, Reading, Processing File.	3
Total Lectures		52

Flipped Classroom Activity: Topic: Array

Flipped Classroom activity 1(FC-1)

Outside Class activity:

The video resources provided to the students for the flipped classroom activity.

S.No	Video resource	Topics covered
1	https://www.youtube.com/watch?v=3Xo6P_V-qns	Array

In class Activity:

1. Discussion to video concepts.
2. Student will solve Array & string example problem in glass with group of three students.
3. A quiz would be organized to understand the Array & string.
4. Final answer would be explained by teacher and solve one more problem with the group of three students.

Think-Pair-Share (TPS): Discussion with students about the output based questions on array.

- a. **Think (2 min)** - Think the concept individually.
- b. **Pair (2 min)** - Discussion with neighbor and combine the solution.
- c. **Share (5 min)** - Students will present his/her solution to the class and final answer is concluded by the teacher(summarization).

Evolution Criteria for the students:

(A) FOR THEORY COURSES

Sr. N.	Assessment	Weightage (in %)
1.	Mid Term Examination – I and II	35 (17.5 % Each)
2.	Quiz (Best 3 out of 4)	15 (5 % Each)
3.	S & GD/Active Learning & Class Assignment	10
4.	Home Assignment	5
5.	Attendance	5
6.	End Term Examination	30

(B) FOR PRACTICAL COURSES

Sr.N.	Examination	Weightage (%)				
		Performance	Viva – Voce	File	Attendance	Total
1.	Mid Term Examination	20	10	-	-	30
2	End Term Examination	20	10	20	20	70

(C) EXAMINATION SCHEDULE

ACTIVITY	DATE	TIME
QUIZ 1	28-Jan-20	1:05 to 1:55 p.m.
ASSIGNMENT 1	18-Feb-20	1:05 to 1:55 p.m.
QUIZ 2	25-Feb-20	1:05 to 1:55 p.m.
QUIZ 3	31-Mar-20	1:05 to 1:55 p.m.
ASSIGNMENT 2	07-Apr-20	1:05 to 1:55 p.m.
QUIZ 4	16-Apr-20	3:45 to 4:35 p.m.

Text / Reference Book

1. Basics of Computer Science. Forouzan B. Cengage Learning
2. Programming Techniques through C. Venkateshmurthy M. G. Pearson Pub.
3. Programming in ANSI C. Balaguruswamy E. Tata McGraw-Hill Edu.
4. Programming in C. Day P. & Gosh M. Oxford University Press.
5. Let Us C. Kanetkar Y. BPB Pub.

Digital Material

1. <https://nptel.ac.in/courses/106104128/>
2. <https://www.tutorialspoint.com/cprogramming/>

Signature of the faculty

Signature of the HOD