

**Birla Institute of Technology and Science, Pilani, Hyderabad Campus**  
**Department of Computer Sc. and Information Systems**  
**First Semester 2020-2021, Course Handout (Part-II)**  
**CS F111 (Computer Programming)**



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**Date: 17<sup>th</sup> AUG 2020**

In addition to Part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course:

Course Number : CS F111  
Course Title : Computer Programming  
Instructor-In-Charge : Dr. Lov Kumar (lovkumar@hyderabad.bits-pilani.ac.in)  
Instructors : Prof. Chittaranjan Hota, Mr. Nikumani, Mr. Sandeep Vidyapu  
Anirudh K, Mandan Naresh, Mohita Ghidyal, Priyanka Chaudhary, Deepa Kumari

**Scope and Objective of the Course:**

This is an introductory course to computers and programming in 'C'. This course uses a bottom-up approach to teach the beginners what is the structure of a computer and how it can be programmed. It also covers adequate knowledge of Number systems. The course starts with the process of creating or developing algorithms/ flowcharts for solving different types of problems using a Computer. At a later stage, it covers programming constructs in C including data types, variables, operators, input/output, decision making, loops, arrays, functions, structures, dynamic memory allocations, file handling. Students also get hands on experience on Linux commands, and C programs in the laboratory. Towards the end of the course, students will be introduced to Python programming in a Procedural programming environment.

The primary goals of the course are to introduce:

- Basic representation of data and how to process this data using different types of storage representations inside a computer.
- Algorithm development for different tasks to be executed on a Computer and programming these using the high level language 'C'.

**Text Book:**

T1: Programming in ANSI C, E Balaguruswamy, Mc Graw Hill, 8<sup>th</sup> Edition 2019.

**Reference Books:**

R1: The C Programming Language, Kernighan and Ritchie, 2nd Edition, Pearson, 2015.

R2: How to Solve it by Computer, R.G.Dromey, 1st Edition, Pearson, 2006.

R3: Let us C, Yaswanth Kanethkar, BPB Publications, 16th Edition, 2017.

## Lecture Plan:

Lecture #	Learning Objectives	Topics	Reference
1-2	Introduction to Computers.	Historical perspective to computing, Basic structure of a computer, H/w and S/w, Basic operations, Programming languages, Anatomy of a computer, Classification of Computers.	T1 (1)
3-4	To understand how simple numeric data is represented inside a computer.	Number systems, Data representation, Binary arithmetic, Conversion from one base to another, Complement representations of negative numbers.	Lecture notes
5-6	To create algorithms for solving problems.	Concept of an algorithm and its design, Flowcharts.	T1 (1)
7-8		Transition of an algorithm to a program, Concept of a program.	T1 (2)
9-10	To understand the concept of problem solving using digital computer as a concrete engineering activity.	Representation and Manipulation of data (data types)	T1(3)
11		Evaluation of expressions (Operations on simple data)	T1(4)
12-13		Input and Output Operations including formatting.	T1(5)
14-15	The use of programming language 'C' for problem solving.	Sequential Evaluation and Conditional Evaluation (Sequential and conditional statements)	T1(6)
16-17		Iterative/Repetitive constructs	T1(7)
18		Programming using iterative/ repetitive constructs.	T1(7)
19-20	To understand specific constructs in C as tools available for handling specific class of problems.	Memory segment of a C program in RAM and Different storage classes: auto, register static and external.	T1(7)
21-23		Arrays	T1(8)
24-26		Strings	T1(9)
27-31		Modular programming: User defined functions.	T1(10)
32-34		Structures & Unions	T1(11)
35-338		Pointers	T1 (12)
39-41		Dynamic memory allocation: Linked lists. Binary trees, Searching.	T1 (14)
42-43		File management in C.	T1 (13)

**Lab Plan:**

Lab#	Topics	Reference
1	Introduction, Input and Output Operations including formatting.	T1(5)
2	C statements and blocks, Making decisions: if-else, else-if, switch construct	T1(6)
3	while, do-while, for, break and continue, goto and labels	T1(7)
4	while, do-while, for, break and continue, goto and labels	T1(7)
5	Functions	T1(10)
6	Recursion	T1(10)
7	Arrays	T1(8)
8	2-D Arrays	T1(8)
9	Pointer	T1 (12)
10	Strings & Dynamic Memory Allocation	T1(9)
11	Structure, Union, Enumeration	T1 (11)
12	File Handling	T1 (13)
13	Link List	T1 (14)

**Evaluations:**

Component	Duration	Weightage (%)	Date & Time	Nature of Component
Test 1	30 Mins	10%	September 10 – September 20 (during scheduled class Hour)	Open Book
Test 2	30 Mins	15%	October 9-October 20(during scheduled class hour)	Open Book
Test 3	30 Mins	10%	November 10- November 20 during scheduled class hour)	Open Book
Lab Evaluations	Lab quiz 1: 15 % Lab quiz 2: 15 % Lab quiz 3: 15 %	30%	Best 2 quizzes out of total three (3) to be conducted with programming problems only. No make up for any component.	Open Book
Comprehensive Exam	2 Hrs.	35%		Open Book

**Make-up-Policy:**

Make-up will be strictly granted on prior permissions and on justifiable grounds only.

**Course Notices:**

All notices pertaining to this course will be displayed on the googleclass page (<https://classroom.google.com/u/0/c/MTI1OTUxMTA1NTU1>) and CMS.

**Chamber Consultation Hour:**

Google meet (<https://meet.google.com/lookup/corkdbv67q>) (Friday: 4:00 PM to 5:00 PM)

**Academic Honesty and Integrity Policy:**

Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

**Instructor-In-Charge**  
**CS F111**