Birla Institute of Technology & Science, Pilani
Hyderabad Campus

FIRST SEMESTER 2022-2023

Course Handout Part II

Date: 18th October 2022

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. Pragati Shrivastava (pragati.shrivastava@hyderabad.bits-pilani.ac.in)
Instructors : Prof. Chittaranjan Hota, Dr Apurba Das, Dr Lov Kumar, Dr. Jay Kamlesh Dave , Dr. Manjanna B, S Shashank, Priyanka Rushikesh Chaudhary, S Rasagna Vakkalanka, Mekala Kiran, Pooja.

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 C programs in the laboratory.

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, 8th Edition 2019.

Reference Books:
R1: J.R. Hanly and E.B. Koffman, *Problem Solving and Program Design in C*. 7th Edition. Pearson Education 2013.
R2: The C Programming Language, Kernighan and Ritchie, 2nd Edition, Pearson, 2015.

R3: How to Solve it by Computer, R.G.Dromey, 1st Edition, Pearson, 2006.

R4: Let us C, Yaswanth Kanethkar, BPB Publications, 16th Edition, 2017.

Lecture Plan:

Lecture#	Learning Objectives	Topics to be covered	Chapter in the Text Book
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. The use of programming language 'C' for problem solving.	Representation and Manipulation of data (data types)	T1(3)/R1(2)
11		Evaluation of expressions (Operations on simple data)	T1(4)/R1(2)
12-13		Input and Output Operations including formatting.	T1(5)/ R1(2)
14-15		Sequential Evaluation and Conditional Evaluation (Sequential and conditional statements)	T1(6) /R1(4)
16-18		Iterative/Repetitive constructs	T1(7)/R1(5)
19-20		Programming using iterative/ repetitive constructs.	T1(7)/R1(5)
21-23		Arrays	T1(8)/R1(7)

24-26	To understand Arrays and strings and problem solving using these constructs in C. To understand modular programming and problem solving using it in C. To understand the pointers and use of pointers in C. To understand dynamic memory allocation and File management in C.	Strings	T1(9)/R1(8)
27-30		Modular programming: User defined functions.	T1(10)/R1(3).
31-33		Structures & Unions	T1(11)/R1(10)
34-37		Pointers	T1(12)/R1(10)
38-40		Dynamic memory allocation in C: malloc, calloc, realloc, free, linked lists etc.	T (14)/R1(13)
41-42		File management in C.	T1 (13)/R1(11)

Evaluations:

Component	Duration	Weightage(%)	Date & Time	Nature of Component
Mid-sem	90 minutes.	30%	06/01 9.00AM - 10.30AM	Open Book
Lab evaluations	In the lab hours.	10%	---	Open Book
Lab tests (Two Tests each of 10%) At Least one will be conducted before midterm	60-90 minutes	20%	---	Open Book
Comprehensive	180 minutes.	40%	15/02 FN	Closed Book

Note: minimum 40% of the evaluation to be completed by midsem grading.

Make-up-Policy:
Make-up will be strictly granted on prior permissions and on justifiable grounds only. Students applying for make-up on medical grounds need to submit confirmation letter from authorized medical practioners. No makeup for regular labs.

Course Notices:
All notices pertaining to this course will be displayed on the Google Classroom / CMS. Continuous lab evaluations and lab exam will be conducted physically in the lab using lab machines.

Chamber Consultation Hour:
Will be announced in the Classroom.

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