Birla Institute of Technology and Science, Pilani, Hyderabad Campus
First Semester 2021-2022, Course Handout (Part-II)

Date: 30th Sept 2021

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	: CHITTARANJAN HOTA (hota@hyderabad.bits-pilani.ac.in)
Instructors	: Lov Kumar, Subhrakanta Panda, Mrityunjay Singh, Ayan Das, S Rasagna, T Sahithi, Priyanka R, K Sai Anirudh

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, 8th 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 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.	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)
16-18		Iterative/Repetitive constructs	T1(7)
19-20	To understand specific constructs in C as tools available for handling specific class of problems.	Programming using iterative/ repetitive constructs.	T1(7)
21-23		Arrays	T1(8)
24-26		Strings	T1(9)
27-30		Modular programming: User defined functions. API basics using Postman: API construct and breakdown using Postman platform (API format and verbs, Request and response basics).	T1(10) & Class notes and Postman resources.
31-33		Structures & Unions	T1(11)
34-37		Pointers	T1 (12)
38-40		Dynamic memory allocation in C: malloc, calloc, realloc, free, linked lists etc.	T1 (14)
41-42		File management in C.	T1 (13)

Evaluations:

Component	Duration	Weightage(%)	Date & Time	Nature of Component
Mid-sem	1.5 Hrs.	30%	08/12 - 9.00 - 10.30AM	Open Book
Lab Evaluations (two lab quizzes plus every lab will be evaluated off-line)	Two lab quizzes will be of 30 minutes each (25%) + Continuous lab evaluations (10%). Before Midsem grading minimum 40% evaluations will be over.	35%		Open Book
Comprehensive	2 Hrs.	35%	27/01 FN	Open Book

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.

Course Notices:
All notices pertaining to this course will be displayed on the googleclass page. Continuous lab evaluations and lab exam will be conducted on mettl/ onlinegdb or google forms.

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