



Second Semester 2023-2024
Course Handout Part II

Date: January 9th, 2024

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. Nikumani Choudhury (nikumani@hyderabad.bits-pilani.ac.in)
Instructors : Dr. Apurba Das, Prof. Chittaranjan Hota, Dr. Jay Dave, Dr. Aneesh Chivukula.
PhD T.A. : S Rasagna Vakkalanka, Praneeta Krishnaprasad, Chavali Lalitha, Mekala Kiran

Scope and Objectives of the Course:

This is an introductory course to computers and programming. The language used to explain the concepts is preferably 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 used in most languages like C, C++, etc. 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 objectives 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 languages.

Text Book:

T1: J.R. Hanly and E.B. Koffman, *Problem Solving and Program Design in C*. 8th Edition. Pearson Education 2015.

Reference Books:

R1: Programming in ANSI C, E Balaguruswamy, Mc Graw Hill, 8th Edition 2019.

R2: The C Programming Language, Kernighan and Ritchie, 2nd Edition, Pearson, 2015.

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

R4: An Introduction to Programming through C++, Abhiram Ranade, McGraw-Hill Education, 2016

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.	R1 (1)
7-8		Transition of an algorithm to a program, Concept of a program.	R1 (2)
9-10	<p>To understand the concept of problem solving using digital computer as a concrete engineering activity.</p> <p>The use of programming language 'C' for problem solving.</p> <p>To understand specific constructs in C as tools available for handling specific class of problems.</p>	Representation and Manipulation of data (data types)	T1(2)/ R1(3)
11		Evaluation of expressions (Operations on simple data)	T1(2)/ R1(4)
12-13		Input and Output Operations including formatting.	T1(2)/ R1(5)
14-15		Sequential Evaluation and Conditional Evaluation (Sequential and conditional statements)	T1(4)/ R1(6)
16-18		Iterative/Repetitive constructs	T1(5)/ R1(7)
19-20		Programming using iterative/ repetitive constructs.	T1(5)/ R1(7)
21-23		Arrays	T1(7)/ R1(8)
24-26		Strings	T1(8)/ R1(9)
27-30		Modular programming: User defined functions.	T1(3)/ T1(10)
31-33		Pointers	T1(6)/ R1(12)
34-36		Structures & Unions	T1(10)/ R1 (11)
37-38		Dynamic memory allocation in C: malloc, calloc, realloc, free, linked lists etc.	T1(13)/ R1 (14)
39-40		File management in C.	T1(11)/ R1 (13)

Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of Component
Mid-sem	90 mins	30%	15/03 - 2.00 - 3.30PM	Closed Book
Continuous Lab Quiz	Lab Duration	10%	In Lab (best 10/13)	Open Book
Class Interaction/Quiz	In class	10%	In class (best 10/15)	Open Book
Lab Exam	60 mins	10%	TBA	Open Book
Comprehensive	180 mins	40%	17/05 FN	Closed Book

*40% of the Evaluation will be completed by Mid Semester Grading.

Make-up-Policy:

Make-up will be strictly granted on prior permissions and on justifiable grounds only. There is no make-up for Lab evaluation/quiz and Class interaction/quiz.

Course Notices:

All notices pertaining to this course will be displayed on the CMS course page.

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