NATIONAL INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Course title	Basics of Programming		
Course Code	CSIR11		
Department	CSE	**No. of Credits**	2
Pre-requisite Course	Nil	**Faculty Member handling the subject/ Department/ Email id**	Mrs. S. Jaya Nirmala / CSE sjaya@nitt.edu
Course Chairman Email id	Dr. B. Malarkodi, Associate Professor/ECE malark@nitt.edu		
Course Type	Core Course		

2. Course Overview

Solutions to well-posed problems in Science and Engineering using computers is now widely accepted to the advent of many programming languages . With the introduction of C in the late 1970s, many tasks in numerical computing, string manipulations, low-level programming are known to be feasible using high-level language constructs and features. The present course will quickly review computer organization and the basic constructs in C. Different examples illustrating various features of C will be illustrated. A moderate level of skill development through problem-solving will be aimed at. Important concerns in programming such as structured programming will be covered.

3. Course Objectives

- To review the abstract model of a stored-programmed computer from the viewpoint of computer organization
- To learn problem solving techniques using algorithms via a set of examples of varying difficulty.
- To learn the syntax and semantics of the C programming language
- To develop the C code as solutions to well-posed problems.
- To understand the basics of structured programming and appreciate how goto-less code is easy to understand.

4. Course Outcomes (CO)

- Ability to write algorithms for problems.
- Ability to comprehend the syntax and semantics of C programming .
- Ability to code a given logic in C language for solving problems .

5. Course Outcome (CO)	Aligned Programme Outcome							
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
Ability to write algorithms for problems	S	B	M	S	B	B	M	B
Ability to comprehend the syntax and semantics of C Constructs	S	B	S	S	B	B	M	B
Ability to code a given logic in C language for solving problems	S	B	S	S	B	B	M	B

S=0.6 M=0.4 B=0

6. Course teaching and Learning Activities		
Week	Topics Covered	Mode of Delivery
1	Class I: Introduction to computers – Computer organization	Chalk and Talk
	Class II: Introduction to C – C character set – Some simple programs in C to enable the students to workout programs in the ensuing lab session.	
	Lab session 1 – Simple C programs	
2	Class I: Characteristics – Hardware and software, Modes of operation – Types of programming languages	Chalk and Talk
	Class II: Developing a program – Algorithms – Some simple programs in C to enable the students to workout programs in the ensuing lab session.	
	Lab session 2 - Sequential Structure	
3	Class I: Principles of structured programming- Variables – Declarations – Operators – Expressions – Statements in C	Chalk and Talk
	Class II : Identifiers and Keywords – Data-types – Constants	
	Lab session 3 – Sequential Structures and Expressions evaluation based on operator precedence	
4	Class I: Selective structures in C – *if* statement *a*nd its types – *switch, goto*	Chalk and Talk
	Class II: *switch* statement – *break* statement – *continue* statement – *comma* operator – *goto* statement	
	Lab session 4 - Programs using Selective structures	
5	Class I: Strings in C – Symbolic constants – Library functions	Chalk and Talk
	Class II: Data input and output: Single character input and output – Entering input data –Writing output data – *gets* and *puts* functions.	
	Lab session 5 - Programs using Symbolic Constants, Library functions	
6	Class I: Repetitive structures – Bounded , Unbounded and Infinite iterations – Examples for each	Chalk and Talk

	Class II: Control statements – Looping: *while – do-while – for*; Nested control structures	
	Lab session 6 - Programs on control statements	
7	Class I: Modular Programming – Functions and Procedures – Defining a function –Accessing a function – Function prototypes – Passing arguments to a function.	Chalk and Talk
	Class II: Parameter passing methods – Examples	
	Lab session 7- Programs using functions with parameter passing a) by value, b) by reference	
8	Class I: Arrays –Defining an array –Processing an array–Examples	Chalk and Talk
	Class II: Multidimensional arrays - Examples	
	Lab session 8 - Programs using one dimensional and multidimensional arrays – Insertion sort – Merge sort - Matrix multiplication	
9	Class I: Pointers Variables – definitions and initialization – Pointer operators – Pointer expressions and arithmetic	Chalk and Talk
	Class II: Pointers and one-dimensional arrays	
	Lab session 9: Programs using Pointers	
10	Class I: Passing arrays to a function – Passing pointers to a function	Chalk and Talk
	Class II: String manipulation using pointers – Recursion.	
	Lab session 10 - Programs using Recursive Functions – (Exponentiation – Fibonacci Numbers)- Functions and Pointers (K& R C book examples – Reversal of a String- Concatenation - Searching for a pattern across a text document)	

The assessment in this course has two components, viz., theory and practical. The assessment in theory component has cycle test and end semester examination. The assessment in theory will be done for a total of 70 marks. The assessment in practical component has periodical record / observation evaluation and end-semester examination. The assessment in Practical will be done for a total of 30 marks. The details are given below. The total marks for this course is 100. Letter grades will be awarded. The passing minimum will be either 33 or (average mark of the class / 2), whichever is greater.

7. Course Assessment Methods – Theory

S.No	Mode of Assessment	Week	Max. Marks	Duration
1	Cycle Test-1	1st week of October	15	1 Hr
2	Cycle Test-2	2nd week of November	15	1 Hr
3	End- Semester Exam	2nd week of December	40	3 Hrs
Total			**70**	

8. Course Assessment Methods – Practical

S.No	Mode of Assessment	Week	Max. Marks	Duration
1	Verification of programs/ algorithms	-	10	--
2	End-Semester lab exam	Last Week of November	20	2 Hrs
Total			**30**	

9. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

Text Books

1. Byron Gottfried, "Programming with C", Third Edition, Tata McGraw Hill Education, 2010
2. R. G. Dromey, "How to Solve it By Computers?", Prentice Hall, 2009.

Reference Books

1. J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", 6th Edition, Pearson Education, 2009.
2. Paul Deital and Harvey Deital, "C How to Program", Seventh Edition, Prentice Hall, 2012.

10. Course Exit Survey (mention the ways by which the feedback about the course is assessed and indicate the attainment level)

- The students through the class representative may give their feedback at any time to the course chairman which will be duly addressed.
- The students may also give their feedback during class committee meeting.
- 'Course Outcome Survey' form will be distributed on the last working day to all the students and the feedback on various rubrics will be analyzed.
- The COs will be computed after arriving at the final marks.

11. Course policy (including plagiarism, academic honesty, attendance, etc.)

Plagiarism

The students are expected to come out with their original algorithm design and code for problems given during the class work, home work, term project, laboratory exercises, and tests/examinations. assigned.

Attendance

100% attendance is highly recommended. However, relaxation upto 15% will be given for leave on emergency requirements (medical, death, etc.) and for representing institute-level events.

Academic Honesty

(i)If the student is found to be in possession of any electronic device like programmable calculators, mobile phones etc., during the test or exam, he/she will be debarred for 3 years from appearing for the exam and this will be printed in his/her Grade statement/Transcript.

12. Additional Course Information

The students can get their doubts clarified at any time with their faculty member with prior appointment.

Course Faculty

Course – Chairman

8/9/17

HOD/CSE 8/9/2017