Department of Computer Science and Engineering
National Institute of Technology Silchar

Lesson Plan

***Cover Page*: Course Overview**

Semester: 2nd **Year: 2016-16**

Course Title: INTRODUCTION TO COMPUTING	*Course Code*: CS1101
Total Contact Hours: 40 hrs	*Duration of class*: 1 hr
Total Marks: 100	*Date*: January 2, 2015
Lesson Plan Author:	
Checked By:	*Date*: January 2, 2015

Prerequisites:

There are no identifiable or potential prerequisites to take up this course as this itself is an introductory concepts to understand programming, computing theory and associated topics presented at a surface level.

Course Overview:

This course provides students the ability to visualize a generic layout of computing and also art of programming using C. The course as such gives a balanced flavor of the basic computational aspects and programming concepts.

Course Learning Objectives-CLO

This course is the fundamental step towards understand programming paradigm and therefore basics of computer concepts are introduced. This course lays down the following objectives –

1. Discuss various components within a computer that are essential required for any program or algorithm to run on it.
2. Discuss and understand the role of the operating system and storage devices in programming.
3. Analyze and understand the representation of business logics in algorithm, pseudo-code and graphical representation (Flowcharts).
4. Write a maintainable C program for a given algorithm and implement the same.
5. Interpret the given C program. Analyze the code and bring out the expected output for the same.
6. Debug the C program and understand the various level of compilation process.

At the end of the course the students should be able to:

1. Brief out the computer concepts such as hardware, software, operating system, memory etc.
2. Design flowcharts and write the algorithms.
3. Explain Fundamentals of ‘C’ programming.
4. Demonstrate the use of basic data types.
5. Choose appropriate looping and branching constructs while building applications.
6. Design own functions based on the need.
7. Decide the usage of appropriate derived data types such as arrays, structures, pointers etc.

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Course Content

INTRODUCTION TO COMPUTING
THEORY

Course Code: CS1101 **Total Marks: 100**
Hrs / Weeks: L:T:P 3:0:0 **Credits: 6**

Unit – I	
Introduction to Computer Concepts: Digital computer fundamentals – Components of a Computer System, Information Processing Cycle, Computer Hardware – Processing devices	**02 Hrs**
Problem Solving using flowcharts and pseudo-codes: Writing algorithms and drawing flowcharts for simple exercises- Swapping contents of 2 variables, Largest of given three numbers, solving a given quadratic equation, Factorial of a given integer.	**02 Hrs**
Introduction to C programming: Different programming paradigms, structure of C programs, Character set, C tokens, Keywords and Identifiers, Constants, Qualifiers, Variables, Data types, Declaration of variables.	**03 Hrs**
Unit – II	
Handling Input and Output operations: Reading a character, Writing a character, Formatted input, Formatted output, and format specifier for reading number from various number system.	**02 Hrs**
Operator and Expressions: Arithmetic operators, Relational operators, Logical Operators, Assignment operators, Increment and decrement operators, Conditional operators, Bit-wise operators, Special operators, Arithmetic expressions, evaluation of expressions, Precedence of arithmetic operators, Type conversion in expressions, Operator precedence and associativity.	**02 Hrs**
Programming Constructs: Decision Making and Branching: Decision making with if statement, Simple if statement, the if…else statement, nesting of if…else statements, The else if ladder, The switch statement, The *?:* operator, The *goto* statement. Decision making and looping: The while statement, the do statement, The for statement, Jumps in loops.	**05 Hrs**

Unit - III	
Arrays: One dimensional arrays, Declaration of one dimensional arrays. Initialization of one dimensional arrays, Two dimensional arrays, Initializing two dimensional arrays, Example Programs.	**04 Hrs**
Character Arrays and Strings: Declaring and Initializing String Variables, Reading Strings from Terminal, writing strings to screen, Arithmetic Operations on characters, Putting Strings together, Comparison of two strings, String handling functions.	**04 Hrs**
Unit – IV	
User-defined functions: Need for user defined functions, A multi-function program, Elements of user defined functions, Definition of functions, Return values and their types, Function calls, Function declaration, Category of functions, No arguments and no return values, Arguments but no return values, Arguments with return values, No argument but returns a value, Function that return Multiple values, Scope and Visibility.	**05 Hrs**
Structures and Unions: Introduction, Structure definition, Giving values to members, Structure initialization, Comparison of structure variables, Arrays of structure, Arrays within structures, Structure within structures, Structures and function.	**03 Hrs**
Unit – V	
Pointers: Pointer data type. Declaring and initializing a pointer. Accessing variables using pointers and one dimensional array. Pointer expressions, Pointer increments and scale factor, Pointers and arrays, Dynamic memory allocation using *malloc*, *calloc* etc.	**04 Hrs**
File Managements in C: Introduction, Definition and opening a file, Closing a file, Input/Output operations on files – getc, putc, getw, putw, fprintf, fscanf functions, Error handling during I/O operations – ferror, feof.	**04 Hrs**

Reference Books

1. E. Balaguruswamy , "Programming in ANSI C", Tata McGraw Hill, 5th edition,2010. ISBN (13): 9780070681828.
2. P. Dey, M. Ghosh, "Programming in C", oxford university press, First Edition, 2007, ISBN(13): 9780195687910.
3. Kernighan, Dennis M. Ritchie, "The C Programming Language" (2nd ed.), Prentice Hall, 2005. ISBN (13): 9780131101630.
4.

Evaluation Scheme

CIE Scheme

Assessment	Weightage in Marks
Internal	20
Mid-Sem	30
End-Sem	50
Total	100

Best out of 2 class tests will be considered for Internal marks.