COMSATS Institute of Information Technology
Abbottabad

Course Plan

Semester FALL 2013

Introduction to Computer Programming

Class: EPE-2A Course Code: CSC 141

By: Rab Nawaz Jadoon

Total Credit Hours: 4	Lectures Credit Hours: 3	Lab. Credit Hours: 1
Total Contact Hours: 6	Lecture Contact Hours: 3	Lab. Contact Hours:3

Office Hours **(Day, time and place):** **Wed (9:00AM – 5:00PM)**
Fri (11:30AM – 5:00PM)
(In addition to these timings I am available two times in lab and two time in your class scheduled in a week)

Pre-Requisite: Nil

Course Objectives and Outcomes

First Part Objectives	The objective of this part is to familiarize the students with the computers, their history, type and applications in real life. Basic concepts of software and hardware will be taught to students in detail. By the end of first part the students will be totally familiar with the practical use of computer.
Second Part Objectives	After completion of the first part, the students will be able to understand basic concepts of computer programming. Which includes computer and computer Program, CPU level execution of program, Overview of programming Language, Different Levels of Programming language, Basic Structure and Elements of C Program, Input and Output, Variables, Data Types, Data Type Conversions, Format Specifiers, Escape Sequences, Arithmetic Operators, Arithmetic Assignment Operators, Precedence of Operators, Loops, Conditional statements, functions, Arrays etc.
Ultimate Objectives	Computer programming is by its nature inherently mathematical learning a programming language is challenging and difficult and hard work for most students. but Upon completing this course the students should be able to outline and describe the basic concepts related to programming. Describe, analyze and use the various mechanisms in programming language; e g. data types, scope, control structures subprograms, etc. use the major programming paradigms which includes Functional and Logical.

Note: The contents may be revised, if deemed necessary after the first Sessional test.

Contents: (Covered → red font color)

Introduction to C and its basic constructs

Installing and using Turbo C++ 3.0, introduction to the IDE. Writing a simple program.

Algorithms, Flow Charts, Files used in C program development system, the basic structure of C program, writing, saving and executing a simple C program.

Comments, Variables, and basic Input Output in C. Format specifiers and escape sequences. Fundamental Data Types, Constants and Variables, Defining and Declaring Variables, Variable Types, Floating Point Variables.

Practicing basic Input and Output, designing a top-down algorithm

Standard Input Output, Numeric data and arithmetic in C

Arithmetic Assignment Operators, Increment Operator, Decrement Operator, Relational Operators.

Standard Library Functions

Symbolic Logic and Boolean data

Decision control structure

Branching in C (if, if-else, else if clause, Conditional operators)

Nested if else.

Case Control Structure

Switch case default, break and continue statements

Idiot proofing and error handling

Loop Control Structure

While Loop
For Loop
Nested Loops

Functions

Introduction to functions
Built in functions
User Defined Functions
Recursion

Arrays

Introduction to arrays
Searching, Sorting, insertion deletion in Arrays
Two dimensional Arrays
String processing

Pointers

Pointers, Use of Pointers, Returning data from Functions, Passing Values to a Function, Passing Addresses to a Function, Defining Pointer Variables.
Supplying Values to Pointer Variables, Pointers and Arrays, Pointer Constants and Pointer Variables.
Pointers and Strings, Strings initialized as Pointers, Initializing an Array of Pointers to Strings, Manipulating Pointers to Strings, Pointers to Pointers.

Structure

Structures, Declaring a Structure type, Defining Structure variables, Entering Data into Structures, Nested Structures, Unions

File processing

Files and streams, creating a sequential access file, creating Random access files, Reading and writing in files.

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Recommended books

1. Let us C by Yashvant Kanetkar
2. C-How to program by Dietal and Dietal

Note:
All course related material (course handbook, contents, Lecture handouts, Lab works etc is available on my blog,
http://jadoon956.wordpress.com/courses/