GC Women University Sialkot

Course Outline

Programming Fundamentals

Programming Fundamentals Instructor**: Dr. M. Usman Ashraf**

Credit Hrs: **3** Semester: **1st**

Course Objective: Introduction to the art of computing. The course objectives are to understand relationships between computation, problem solving, and programming using high-level languages. This will cover basic structures of C programming and then take you to high level concepts. The second part of this course will focus on object oriented programming using C++. It will include important concepts in OPP that differentiate it from function oriented approach

Text Book: C How to Program (Introducing C++ and OOP) by Deitel & Deitel, 8th Edition

Reference Books: 1. Thinking in C++ Bruce Eckel

2. Programming in C by Stephen G. Kochan

Week Mon- Fri	Topics	Text Book	Tests & Assign.
Week-1	● Introduction to Programming & Problem Solving ● How to approach a problems and write a program ● Exercises related to Problems solving and Algorithm development	CH 3	
Week-2	● Introduction to C Language ● C Program Structure o Input/ Output o Libraries o Memory concepts o Arithmetic in C	CH 2	
Week-3	● Control Structures in C o Why control structures are required o Repetition essentials o Kinds of controls structures o Comparisons between control structures	CH 4	**Assignment No 1** **(Based on control structures)**
Week-4	● Functions o Need of modular approach	CH 5	

	○ Functions and library functions ○ Definitions and prototype ○ Function call by (Value and Reference)		
Week- 5	● Functions Contd… ○ Scope rules ○ Examples ● Arrays ○ Arrays introduction ○ Passing arrays to functions ○ Case study	CH 5 CH 6	**Assignment No 2 (Based on function and arrays)**
Week-6	● Pointers ○ Definition and initialization ○ Pointer operators ○ Passing arguments to function using pointers ○ Referencing and dereferencing	CH 7	
Week-7	● Pointers ○ Relations between pointer and arrays ○ Sizeof operator ○ Array of pointers ○ Pointer to functions	CH 7	**Assignment No 3 (Based on pointers)**
Week-8	● Revision ● Midterm exam		
Week-9	● C Characters and Strings ○ Fundamentals of strings and characters ○ String conversion ○ String manipulation functions ○ String comparison ○ Memory function	CH 8	
Week-10	● C Structures and Unions ○ Definition ○ Initializing ○ Accessing members ○ Using structure with functions ○ Enumeration	CH 10	**Assignment No 4 (Based on structure and string manipulation functions)**

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Week-11	• Classes and Objects o Classes, Objects and Member functions o Constructor & destructor methods o Examples and case study	CH 19, 20, 21	
Week-12	• Classes and Objects Condt… o Scope and access o Information hiding and encapsulation • Inheritance o Derived classes o Why inheritance? o Relation between base and derived class	CH 21, 23	**Assignment No 5** **(Based on classes)**
Week-13	o Public private and protected inheritance o Case Study based on inheritance • Polymorphism o Introduction o Types and ways to achieve polymorphism o Operator Overloading	CH 23 CH 24	**Assignment No 6** **(Based on Inheritance)**
Week-14	• Polymorphism Contd… o Example and Exercises	CH 24	
Week-15	Revision & Spill over		**Assignment No 7** **(Based on Polymorphism)**

Grading Criteria

Quizzes + CP (unannounced)	15+5
Assignments + Labs	10+10
Mid-term Exam	25
Final Exam	35
Total	100

Rules:

- **No makeup quizzes or exams**

- **Copying an assignment will result a zero in assignment first time and an F grade in the course second time**
- **80% attendance is necessary in any scenario. Rest of the 20% is relaxation for illness, deaths and other emergencies**
- **There will be a margin of 10 minutes. Student coming late more than 10 minutes will be marked late and three late will be considered as one absent.**