



National Computing Education Accreditation Council NCEAC



NCEAC.DOC.001-E

COURSE DESCRIPTION

NAME OF INSTITUTION	Lahore Garrison University
PROGRAM (S) TO BE EVALUATED	Computer Science , Fall 2022

Course Description : Introduction to problem solving, a brief review of Von-Neumann architecture, Introduction to programming, role of compiler and linker, introduction to algorithms, basic data types and variables, input/output constructs, arithmetic, comparison and logical operators, conditional statements and execution flow for conditional statements, repetitive statements and execution flow for repetitive statements, lists and their memory organization, multi-dimensional lists, introduction to modular programming, function definition and calling, stack rolling and unrolling, string and string operations, pointers/references, static and dynamic memory allocation, File I/O operations

Course Code	CSC313															
Course Title	Programming Fundamentals															
Credit Hours	3+1															
Prerequisites by Course(s) and Topics	NIL															
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	SESSIONAL (Quizzes, Assignments, Presentations) =25 % Midterm Exam =25 % Final Exam = 50%															
Course Coordinator	Dr. SajidFarooq															
URL (if any)																
Current Catalog Description	Introduction to problem solving, a brief review of Von-Neumann architecture, Introduction to programming, role of compiler and linker, introduction to algorithms, basic data types and variables, input/output constructs, arithmetic, comparison and logical operators, conditional statements and execution flow for conditional statements, repetitive statements and execution flow for repetitive statements, lists and their memory organization, multi-dimensional lists, introduction to modular programming, function definition and calling, stack rolling and unrolling, string and string operations, pointers/references, static and dynamic memory allocation, File I/O operations															
Textbook (or Laboratory Manual for Laboratory Courses)	C How to Program, 7th Edition by Paul Deitel & Harvey Deitel															
Reference Material	1) Behrouz A. Forouzan, "A Structured Programming Approach Using C++". 2) Joyce Farrel, "Programming Logic and Design", 2nd, Thomson Press. 3) Nell Dale, Chip Weems, "Programming and Problem Solving with C++", 5th, C++ programming Aikman series															
Course Goals	Students will be able to: 1) differentiate between the data and instructions part of an object definition. 2) Select access level/modifiers to achieve appropriate level of encapsulation. 3) Select appropriate fields to include within a class. 4) Design and implement programs where two or more classes interact. 5) Understand how packages are used to organize classes and how they are used in import statements. 6) Be able to describe the difference between: a class and an object, object reference and primitive variable, object reference and object in memory															
Course Learning Outcomes (CLOs):	<table><tr><th>At the end of the course the students will be able to:</th><th>Domain</th><th>BT Level*</th></tr><tr><td>Understand basic problem solving steps and logic constructs</td><td>C</td><td>2</td></tr><tr><td>Apply basic programing concepts</td><td>C</td><td>3</td></tr><tr><td>Design and implement algorithms to solve real world problems.</td><td>C</td><td>3</td></tr><tr><td colspan="3">* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain</td></tr></table>	At the end of the course the students will be able to:	Domain	BT Level*	Understand basic problem solving steps and logic constructs	C	2	Apply basic programing concepts	C	3	Design and implement algorithms to solve real world problems.	C	3	* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain		
At the end of the course the students will be able to:	Domain	BT Level*														
Understand basic problem solving steps and logic constructs	C	2														
Apply basic programing concepts	C	3														
Design and implement algorithms to solve real world problems.	C	3														
* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain																

Topics Covered in the Course, with Number of Lectures on Each Topic (assume 15-week instruction and one-hour lectures)	Week	Lecture	Topics Covered
	Week 1	1	Introduction to problem solving
		2	Review of Von-Neumann architecture
	Week 2	3	Introduction to programming, role of compiler and linker, introduction to algorithms, basic data types and variables.
		4	Input/output In C++, Assignment
	Week 3	5	Creating , editing, linking, execution and debugging of C++ program Practice Exercise
		6	Constants, Operators Expression, Assignment statement
	Week 4	7	Sequential Structure
		8	Arithmetic, comparison and logical operators
	Week 5	9	Boolean Expressions & Compound Boolean Expressions
		10	Conditional statements and execution flow for conditional statements, Quiz, Assignment
	Week 6	11	Single Alternate decision structure and dual alternate decision Structure.
		12	Nested Decision Structures
	Week 7	13	Switch Statements
		14	Practice of Decision Structures, Quiz
	Week 8	1 hours	Mid Term
	Week 9	15	Repetition Structures Introduction, (while, do while & for loop)
		16	While & do While Loop Practice
	Week 10	17	Do While Loop, Nested While
		18	For loop, Nested for loop
	Week 11	19	Mid Term
		20	
	Week 12	21	Printing different shapes in C++ using Nested Loops
		22	Practice, Assignment
	Week 13	23	Arrays
		24	Arrays and their memory organization
	Week 14	25	2-dimensional Arrays
		26	Multi-dimensional Arrays, string and string operations
	Week 15	27	Functions Introduction, type of functions built-in and user defiend
		28	Declaring, Defining and Calling a function, Quiz
	Week 16	29	References to Variables
		30	Pointers , Call by value & call by reference
	Week 17	2 hours	Final Term
Laboratory Projects/Experiments Done in the Course			
Programming Assignments Done in the Course			

Instructor Name Dr. SajidFarooq

Instructor Signature

Date