



## COURSE DESCRIPTION FORM

**INSTITUTION**                      National University of Computers and Emerging Sciences

BS Computer Science

**PROGRAM (S) TO BE**

**EVALUATED**

### A. Course Description

(Fill out the following table for each course in your computer science curriculum. A filled out form should not be more than 2-3 pages.)

<b>Course Code</b>	CL1002
<b>Course Title</b>	Programming Fundamentals Lab
<b>Credit Hours</b>	1
<b>Prerequisites by Course(s) and Topics</b>	None
<b>Assessment Instruments with Weights</b> (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	<b>Lab Tasks:20</b> <b>Mid:20</b> <b>Project:10</b> <b>Final:50</b>
<b>Course Coordinator</b>	Sir Shahzad
<b>URL (if any)</b>	
<b>Current Catalog Description</b>	
<b>Textbook (or Laboratory Manual for Laboratory Courses)</b>	<u>Name:</u> C How to Program with an Introduction to C Global Edition - 7th Edition <u>Authors:</u> Paul Deitel, Harvey Deitel <u>Publisher:</u> Pearson  <u>Name:</u> Problem Solving and Program Design in C - 7th Edition <u>Authors:</u> Maureen Sprankle , Jim Hubbard <u>Publisher:</u> Prentice Hall
<b>Reference Material</b>	<u>Name:</u> Working with C / Let us C

	<u>Author(s)</u> : YashwantKanetkar <u>Publisher</u> : BPB Publications  <u>Name</u> : Waite Group’s Turbo C - Programming for the PC <u>Authors</u> : Robert Lafore <u>Publisher</u> : SAMS			
Course Goals	<b>A. Course Learning Outcomes (CLOs)</b>			
	<b>CLO 1:</b> Describe fundamental concepts of structured and procedural programming, use pseudo-codes and simple programs to understand control structures, iterative structures and functions using C language.			<b>C3, PLO1</b>
	<b>CLO 2:</b> Examine code writing, compiling, debugging and program execution.			<b>C3, PLO5</b>
	<b>CLO 3:</b> Justify problem solving techniques and analytical thinking by identifying the concepts and properties of algorithms.			<b>C5, PLO2</b>
	<b>CLO 4:</b> Design basic problems of the real world through small/medium size programs given as course projects.			<b>C6, PLO5</b>
	<b>B. Program learning outcomes (PLO)</b>			
	<b>PLO 1</b>	Computing Knowledge	Apply knowledge of mathematics, natural sciences, computing fundamentals, and a computing specialization to the solution of complex computing problems.	?
	<b>PLO 2</b>	Problem Analysis	Identify, formulate, research literature, and analyse complex computing problems, reaching substantiated conclusions using first principles of mathematics, natural sciences, and computing sciences.	?
	<b>PLO 3</b>	Design/Develop Solutions	Design solutions for complex computing problems and design systems, components, and processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.	
	<b>PLO 4</b>	Investigation& Experimentation	Conduct investigation of complex computing problems using research-based knowledge and research-based methods	
<b>PLO 5</b>	Modern Tool Usage	Create, select, and apply appropriate techniques, resources and modern computing tools, including	?	

			prediction and modelling for complex computing problems.											
	PLO 6	Society Responsibility	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal, and cultural issues relevant to context of complex computing problems.											
	PLO 7	Environment and Sustainability	Understand and evaluate sustainability and impact of professional computing work in the solution of complex computing problems											
	PLO 8	Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of computing practice.											
	PLO 9	Individual and Team Work	Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.											
	PLO 10	Communication	Communicate effectively on complex computing activities with the computing community and with society at large.											
	PLO 11	Project Mgmt and Finance	Demonstrate knowledge and understanding of management principles and economic decision making and apply these to one's own work as a member or a team.											
	PLO 12	Life Long Learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological changes.											
	C. Relation between CLOs and PLOs (CLO: Course Learning Outcome, PLOs: Program Learning Outcomes)													
			PLOs											
			1	2	3	4	5	6	7	8	9	10	11	12
	CL Os	1	?											
		2					?							
		3		?										
		4					?							
Topics Covered in the Course, with Number of Lectures on Each														
Week		Topics						CLO		Assessment				

Topic (assume 15-week instruction and one-hour lectures)	Week 1	Problem solving with sequential structure using Scratch		Announce Project
	Week 2	Problem solving with the decision and iterative structures using Scratch		
	Week 3	Introduction to IDE and Basic Programming Constructs		
	Week 4	Introduction of operators and math.h library functions		
	Week 5	Basic Decision Structure (if, if- else and Switch Statements)		
	Week 6	THEORY MID I Examination		
	Week 7	Nested Decision Structures		
	Week 8	Iterative Statements in C		
	Week 9	Lab Mid		
	Week 10	Nested Iterations, Arrays Multiple Dimension Array (2D,3D) in C		
	Week 11	THEORY MID II Examination		
	Week 12	Functions, Strings and Recursion		
	Week 13	Introduction to Structures & Nested Structure		
	Week 14	Introduction to file processing and basic operations on files and Introduction to Pointers		
	Week 15	Accessing Arrays using pointer Dynamic Memory Management		
	Week 16	Project Submission		
Laboratory Projects/Experiments Done in the Course	There will be weekly labs starting from the first week. The following is a summary of the Lab exercises given to Students. <ul style="list-style-type: none"><li>● Introduction to Pseudo code, Algorithm and Flowchart and Programming Fundamentals.</li><li>● Introduction To Conditional Statement In C</li><li>● Control Structure (Repetition)</li><li>● Functions and Recursion.</li><li>● Arrays (1D, 2D, 3D)</li><li>● String sorting and searching algorithms.</li><li>● Pointers</li><li>● Dynamic memory allocation</li><li>● Structures</li><li>● Filing in C</li></ul>			



<b>Programming Assignments Done in the Course</b>	Assignment related to Functions, Arrays, Pointers, Structures, Dynamic Memory and File Processing will be done			
<b>Class Time Spent on</b> (in credit hours)	<b>Theory</b>	<b>Problem Analysis</b>	<b>Solution Design</b>	<b>Social</b>
	15%	50%	30%	5%
<b>Oral and Written Communications</b>	Every student is required to submit at least _1_ written reports of typically _2_ pages and to make _1_ oral presentations of typically _10_ minute's duration. Include only material that is graded for grammar, spelling, style, and so forth, as well as for technical content, completeness, and accuracy.			

**Instructor Name: Shaheer Ahmad Khan**

**Instructor Signature** \_\_\_\_\_

**Date** \_\_\_\_\_