Course Name (English)	FUNDAMENTALS OF COMPUTER PROBLEM SOLVING `APPROVED`
Course Code	CSC415

MQF Credit	3

Course Description	This course is an introduction to problem solving using computers. It emphasizes various aspects of problem solving, mainly consisting of the problem domain, phases of problem solving and basic techniques in designing a solution. The approach to problem solving is via structured programming. At this stage, the emphasis will be on computer problem solving rather than syntactical aspects of the chosen programming language.

Transferable Skills	Demonstrate ability to analyse issues/problems from multiple angles and make suggestions

Teaching Methodologies	Lectures, Lab Work, Discussion

CLO	CLO1 Demonstrate an understanding on fundamental of computer problem solving.
	CLO2 Construct algorithmic solution according to a given problem.
	CLO3 Perform autonomous learning related to computer problem solving task.

Pre-Requisite Courses	No course recommendations

Topics
1. Introduction To Computer Programs 1.1) A Brief History of Programming Language 1.2) Introduction to Programming 1.3) Program Development Life Cycle
2. Basic Elements Of A Computer Program 2.1) Identifier, variable, constant 2.2) Data variables, data types and rules for naming and declaring data variables 2.3) Basic data types 2.4) Arithmetic operators 2.5) Assignment statement 2.6) Input/output statement – fix data, keyboard, file 2.7) Arithmetic expression 2.8) Debugging and error handling 2.9) Sequential control structure
3. Selection Control Structure 3.1) Boolean expression 3.2) Relational and logical operators 3.3) Decision Control Instructions
4. Repetition Control Structure 4.1) Counter-controlled structure 4.2) Sentinel-controlled structure 4.3) Flag-controlled structure 4.4) While Loop 4.5) For loop 4.6) Do While 4.7) Nested loop

5. Functions
5.1) Introduction to Functions
5.2) Function declaration/prototype
5.3) Function definition
5.4) Function call
5.5) Built in function – math and string function
5.6) User defined function
5.7) Pass by value, pass by reference

6. Arrays
6.1) Definition of array
6.2) Array Declaration
6.3) Array Initialization
6.4) Accessing individual elements of an array
6.5) Searching and sorting element in array

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	4 lab assignments	25%	CLO2
	Group Project	Mini Group Project	10%	CLO3
	Quiz	2 Quizzes	5%	CLO1
	Test	Test 1	10%	CLO1
	Test	Test 2	10%	CLO1

Reading List	Recommended Text	• Y. Daniel Liang 2013, *Introduction to Programming with C++*, 3 Ed., Pearson Higher Education [ISBN: 978-013325281] • Malik, D.S. 2014, *C++ Programming: From Problem Analysis to Program Design*, 7 Ed., Course Technology [ISBN: 978-128585274]
	Reference Book Resources	• Farrell, Joyce 2014, *Programming Logic and Design Comprehensive*, 8 Ed., Course Technology [ISBN: 978-12857767] • Zak, Dianne 2012, *An Introduction to Programming with C++*, 7 Ed., Course Technology [ISBN: 978-12850614] • Nell Dale, Chip Weems 2014, *Programming and Problem Solving with C++: Comprehensive*, 6 Ed., Jones & Bartlett Publishers [ISBN: 9781284028768] • Stroustrop, Bjarne 2013, *The C++ Programming Language*, 4 Ed., Reading Mass, Addison Wesley [ISBN: 978-032156384]
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	