UNIVERSITI TEKNOLOGI MARA

CSC099: FOUNDATION COMPUTING II

Course Name (English)	FOUNDATION COMPUTING II `APPROVED`
Course Code	CSC099

MQF Credit	5

Course Description	This course introduces basic computer programming algorithm, problem solving, structured programming language, selection structure, repetition structure, function and array. It is specially designed for foundation engineering students according to basic requirements for most bachelor degree in engineering programs and industries. The purpose of this course is to equip students with abilities to construct algorithms in problem solving, to create computer systems as well as having high level of logical and critical thinking skills that are required for their future studies. The aims of this course will be achieved through small scale lecture class and extensive lab exercises starting with basic programming structure to challenging programming problems. In addition, a high quality of academic exercises such as individual assignment and group project will be used to achieve these aims. By the end of this course, students are expected to acquire and apply knowledge of computer programming to respective fields of engineering, computer science and business.

Transferable Skills	team work communication skill problem solving planning

Teaching Methodologies	Lectures, Lab Work, Tutorial

CLO		
	CLO1	Implement basic programming strategies and various problem solving techniques in writing computer programs
	CLO2	Display the use of programming control structures, correct syntax and logic in writing computer programs
	CLO3	Analyse various real-life situation scientifically relating to programming structures in writing computer programs.
	CLO4	Demonstrate autonomous learning along with retrieving and managing information in writing computer programs.

Pre-Requisite Courses	No course recommendations

Topics

1. Introduction to Computer and Programming Language
1.1) Introduction to computer and its application area, computer components, hardware and software.
1.2) Introduction to programming language : Machine Language to High Level Language.
1.3) How does computer run a program.

2. Introduction to C Programming
2.1) General Form of C Programming.
2.2) C Language Elements.
2.3) Token – keyword, identifiers, constant, arithmetic operator & expression, input & output function.
2.4) Data type and its size, declaration & statement.

3. Problem Solving
3.1) Software development methodology and software development lifecycle
3.2) Requirement specification, problem analysis, system design, and system development.

4. Selection Structure
4.1) Statement and blocks
4.2) Logical data and operators
4.3) Two-way selection – if/else statement
4.4) Nested selection – Nested if/else
4.5) Menu program – switch statement

5. Repetition Structure (Looping)
5.1) Concept of repetition structure
5.2) Pre-test and post-test Loops
5.3) Initialization and Updating
5.4) Event and Counter – controlled loop
5.5) Loop in C

6. Function and Program Structure
6.1) Function in C
6.2) User – defined function
6.3) Inter-function communication
6.4) Standard function
6.5) Scope names

7. Array Structure
7.1) Introduction to array
7.2) Array declaration and initialization
7.3) Two-dimensional arrays
7.4) Array processing
7.5) Passing array to function
7.6) String functions

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Students are required to write a program which covers selection, repetition and function structure by using modular approach.	10%	CLO3
	Final Test	Covers selection, repetition, function and array structure.	50%	CLO1
	Group Project	Students are required to develop an interactive system with group members. Students need to present their system and show the capability of the system they developed.	15%	CLO4
	Lab Exercise	Lab Exercise and Take-home Exercise	10%	CLO2
	Test	Covers the first 6 weeks of lecture topics	15%	CLO1

Reading List	Recommended Text	**Aminatul Solehah binti Idris, Nurhilyana binti Anuar, Teh Faradilla binti Abdul Rahman, Raudzatul Fathiyah binti Mohd Said, Zaid Mujaiyid Putra bin Ahmad Baidowi, Zamri bin Abu Bakar 2020, *Programming in C*, 3rd ed Ed., 6, McGraw-Hill Education Malaysia [ISBN: 9789670761480]**
	Reference Book Resources	**Scott Sanderson 2014, *C Programming: C Programming Language Guide For Beginners (Written By A Software Engineer)*, Globalized Healing [ISBN: 9781505857948]**
		Darrel L. Graham 2016, *C Programming Language*, Createspace Independent Publishing Platform [ISBN: 9781534679702]
		Jeri R. Hanly, Elliot B. Koffman, Mohit P. Tahiliani 2016, *Problem Solving and Program Design in C, Global Edition*, 6 Ed., Pearson Education Limited [ISBN: 9781292098814]
		Stephen G. Kochan 2014, *Programming in C*, 5 Ed., Addison-Wesley Professional [ISBN: 978032177641]
		Zed Shaw 2015, *Learn C the Hard Way*, 6 Ed., Addison-Wesley Professional [ISBN: 9780321884923]
		Alan Evans, Kendall Martin, Mary Anne Poasty 2015, *Technology in Action*, 11 Ed., Pearson [ISBN: 1292082356]
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	