

Programming Concepts

Module Information

2022.01, Approved

Summary Information

Module Code	4504ICBTEL
Formal Module Title	Programming Concepts
Owning School	Engineering
Career	Undergraduate
Credits	15
Academic level	FHEQ Level 4
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
International College of Business and Technology

Learning Methods

Learning Method Type	Hours
Lecture	30
Practical	15
Tutorial	9
Workshop	6

Module Offering(s)

Display Name	Location	Start Month	Duration Number	Duration Unit
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APR-PAR	PAR	April	12 Weeks
JAN-PAR	PAR	January	12 Weeks
SEP_NS-PAR	PAR	September (Non-standard start date)	12 Weeks

Aims and Outcomes

Aims	This module aims to introduce the student to both the development of C programs on the windows platform using formal design methods and how to develop C programs to execute on a microcontroller to perform engineering applications that might otherwise be developed with digital hardware. This will start with an introduction to the C constructs, how and when to use them, with graded examples. Later the student will be given engineering problems for which they will write C programs to solve.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Demonstrate an understanding of the Pseudo code, flow chart and state machines to generate the algorithm and break down the given specification into its key components.
MLO2	2	Identify and apply key concepts of C programming including variable declaration, looping and jumping instructions.
MLO3	3	Develop C programming for given engineering problem based on PC and Raspberry pi (or any microcontroller or microprocessor based platform).
MLO4	4	Apply object oriented concepts to solve engineering problems by creating a PC based applications.

Module Content

Outline Syllabus	Introduce the Pseudo code, flow chart and state machine to convert the specification in to algorithm or structured sequence of program instructions. Converting the algorithm into a C program using the C programming language syntax using decision making, repeating operations, C functions following both top down and bottom up design. Introduction to basic programming using C language: Variables, loops, arrays pointers and other control structures. Develop simple applications based on C programme by using PC based (mathematical calculation, sequence detector) and microcontroller (LED array, temperature controller) platform. Introduce to Object Oriented Concepts : Encapsulation, Polymorphism, Inheritance, and apply to develop PC based graphical applications.
Module Overview	
Additional Information	

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Coursework	50	0	MLO3, MLO4
Exam	Exam	50	1	MLO1, MLO2

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Karl Jones	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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