UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Computer Architecture and Systems Software
Module Code	COS4001-B
Academic Year	2024/5
Credits	20
School	School of Computer Science, AI and Electronics
FHEQ Level	FHEQ Level 4

Contact Hours	
Type	Hours
Lectures	12
Tutorials	12
Laboratories	12
Directed Study	164
Directed Study	164
Laboratories	12
Lectures	12
Tutorials	12
Tutorials	To gain a knowledge and understanding of the fundamental aspects of computer architecture and systems software with a focus on digital logic design, computer hardware systems and systems software.
Tutorials	An overview of typical computer system hardware. Representation and coding of information in a computer. Computer arithmetic. Introduction to digital logic. Truth tables, Boolean algebra and the design of simple logic circuits. Sequential logic. Structure of a simple computer CPU and its connection to memory and input/output devices. The computer memory hierarchy. The construction and operation of common I/O devices. Introduction to instruction sets and addressing modes. Introduction to assembly code and simple assembly language exercises. Definition of an operating system via its nature and functions. The process model of computer operation. Appreciation of the hardware interface between a computer and a network.
Tutorials	Lectures will concentrate on concepts, principles and theories of the digital logic design, computer hardware systems and systems software. These will be supported by practical exercises undertaken during labs and direct study. Oral feedback will be given during the labs.

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims

To gain a knowledge and understanding of the fundamental aspects of computer architecture and systems software with a focus on digital logic design, computer hardware systems and systems software.

Outline Syllabus

A simple overview of typical computer system hardware. Representation and coding of information in a computer. Computer arithmetic. Introduction to digital logic. Truth tables, Boolean algebra and the design of simple logic circuits. Sequential logic. Structure of a simple computer CPU and its connection to memory and input/output devices. The computer memory hierarchy. The construction and operation of common I/O devices. Introduction to instruction sets and addressing modes. Introduction to assembly code and simple assembly language exercises. Definition of an operating system via its nature and functions. The process model of computer operation. Appreciation of the hardware interface between a computer and a network.An overview of typical computer system hardware. Representation and coding of information in a computer. Computer arithmetic. Introduction to digital logic. Truth tables, Boolean algebra and the design of simple logic circuits. Sequential logic. Structure of a simple computer CPU and its connection to memory and input/output devices. The computer memory hierarchy. The construction and operation of common I/O devices. Introduction to instruction sets and addressing modes. Introduction to assembly code and simple assembly language exercises. Definition of an operating system via its nature and functions. The process model of computer operation. Appreciation of the hardware interface between a computer and a network.

Learning Outcomes

Outcome Number	Description
01	Represent and process information in binary form and logic circuits;describe the working principle of computer components and an operating system.
02	Design and build simple logic circuits; explain communications between computer components and systems software.
03	Apply logical approaches to software system design and apply number systems.

Learning, Teaching and Assessment Strategy

Lectures will concentrate on concepts, principles and theories of the digital logic design, computer hardware systems and systems software. These will be supported by practical exercises undertaken during labs and direct study. Oral feedback will be given during the labs. Practical understanding, skills and learning outcomes (1, 2, 3) will be tested through coursework.Lectures will concentrate on concepts, principles and theories of the digital logic design, computer hardware systems and systems software. These will be supported by practical exercises undertaken during labs and direct study. Oral feedback will be given during the labs.

Learning outcomes (1, 2, 3) will be tested through both a coursework (an artefact on logical circuit design using Proteus) and a closed-book exam. The coursework has a practical focus and the closed-book exam focuses on the theoretical aspects.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Coursework - Artefact	Logical Circuit design using Proteus.	30%
Summative	Examination - Closed Book	2 hours Exam-closed book.	70%

Reading List
To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

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