H6CA: Computer Architecture

Module Code:	H6CA
Long Title	Computer Architecture APPROVED
Title	Computer Architecture
Module Level:	LEVEL 6
EQF Level:	5
EHEA Level:	Short Cycle
Credits:	5
Module Coordinator:	KEITH MAYCOCK
Module Author:	David McCarthy
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	Master's degree in computing or cognate discipline. May have industry experience also.

Learning Outcomes

On successful completion of this module the learner will be able to:

#	Learning Outcome Description
LO1	Summarise the historical evolution of Computer Architecture
LO2	Distinguish between different computer number systems
LO3	Identify and describe the relationship between each component of the computer system and how each individual component works
LO4	Explain the importance of using Boolean Algebra to logic design
LO5	Describe the use of registers when programming using assembly
LO6	Demonstrate practical assembly programming skills when solving fundamental programming problems

Dependencies

Module Recommendations

No recommendations listed

Co-requisite Modules

No Co-requisite modules listed

Entry requirements	See section 4.2 Entry procedures and criteria for the programme including procedures recognition of prior learning.

H6CA: Computer Architecture

Module Content & Assessment

Indicative Content
Computer Architecture History Turing Machines Vacuum Tubes The impact of the Transistor Integrated Circuits Very Large Scale Integration Ubiquitous Computing Quantum Computing
Number Systems Binary Numbers Octal Numbers Hexadecimal Numbers Number System Conversions
Logic Design and Digital Circuits Binary Logic and Gates. Introduction to Circuit Design. Introduction to Boolean Algebra. Boolean Algebra Identities. Algebraic Manipulation of Logic expressions.
Components System Overview Data transfer and Bus Architecture Internal Memory System Components Peripherals Digital Components (for example Multiplexer, encoder, decoder, Adders)
Assembly Programming Assemblers MIPS Registers Debugging strategies (single step control, using breakpoints) Input and Output Integer Addition and Subtraction Instructions Integer Multiplication, Division, and Arithmetic Shift Memory Access: Loading and Storing Registers Jump and Branch Instructions

Assessment Breakdown	%
Coursework	50.00%
End of Module Assessment	50.00%

Assessments

Full Time

Coursework

Assessment Type:	CA 1	**% of total:**	50
Assessment Date:	n/a	**Outcome addressed:**	1,2,3,4,5,6
Non-Marked:	No		

Assessment Description:
There are four continuous assessments throughout the semester each worth 12.5%.

End of Module Assessment

Assessment Type:	Terminal Exam	**% of total:**	50
Assessment Date:	End-of-Semester	**Outcome addressed:**	1,2,3,4,5,6
Non-Marked:	No		

Assessment Description:
End-of-Semester Final Examination

No Workplace Assessment

Reassessment Requirement

Repeat examination
Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.

H6CA: Computer Architecture

Module Workload

Module Target Workload Hours 0 Hours

Workload: Full Time

Workload Type	*Workload Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	No Description	24	Every Week	24.00
Lab	No Description	12	Every Week	12.00
Independent Learning	No Description	89	Every Week	89.00
			Total Weekly Contact Hours	36.00

Workload: Part Time

Workload Type	*Workload Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	No Description	24	Every Week	24.00
Lab	No Description	12	Every Week	12.00
Independent Learning	No Description	89	Every Week	89.00
			Total Weekly Contact Hours	36.00

Module Resources

Recommended Book Resources

Patterson, D and Hennessy. (2016), Computer Organization and Design: The Hardware/Software Interface, 5th. Morgan Kaufmann, [ISBN: 01397801240].

Panayotis Papazoglou. (2018), The Ultimate Educational Guide to MIPS Assembly Programming, [ISBN: 9781727880878].

This module does not have any article/paper resources

This module does not have any other resources

Discussion Note:	