

ZCOM H2201: Computer Architecture

| Credits: 10 NFQ Level: 6 Module Delivered In No Programmes Teaching & Learning Strategies: Students will be assessed by means of Continuous Assessment and Final Examination. The Continuous Assessment component will consist of practical tests and theory tests. Module Aim: To enable the student to program in assembly and to provide the student with a good knowledge of computer architecture. Learning Outcomes To enable the learner should be able to: D01 Program in 80X86 assembly language; L02 Pass parameters using the stack; L03 Select the appropriate addressing mode to accomplish a given task; L04 Interpret logic circuits; L05 Describe the workings of computer architecture as addressed in the syllabus; Pre-requistle learning Free-requistic skill) that is recommended before enrolment in this module. No recommendations listed Incompatible Modules These are modules which have learning outcomes that are too similar to the learning outcomes of this module. No incompatible modules listed Co-requisite modules listed Requirements To a practical skill) that is mandatory before enrolment in this module is allowed. No requirements Istal as mandatory before enrolment in this module is allowed. <th colspan="2">Module Title:</th> <th>Computer Architecture</th> | Module Title: | | Computer Architecture | | | | |
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| | No requirements | | | | | | |



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Module Content & Assessment

Indicative Content

Assembly Language Programming

Programming: Generic machine language view; Introduction to microprocessors; 80X86 machine and assembly language programming; Addressing modes. Data representation: Integers, character storage, ASCII, EBCDIC and Unicode; Character I/O; Arrays; Strings. Comparison of assembler and high-level language: Examine assembler versions of simple HLL programs. Stack usage; Subroutines internal & external; Parameter passing.

Computer Architecture

Logic circuits: Gates, adder, latches, memory circuit. Addressing methods review: Register, immediate, direct, register indirect, base plus index, register relative, base relative plus index. Addressing support for high level languages: Activation records; local and non-local data. Computer structure: CPU architecture, fetch execute cycle, buses. Interrupts and interrupt handlers; Vectored interrupts, interrupts, interrupt vector table, ISR. I/O systems: Programmed, Interrupt driven and DMA; DMA controller . CISC and RISC architectures; Acceleration and Concurrency: Pipelining, instruction prefetching, instruction queues, cache memory. Introduction to parallel architectures: Array processors; Multiprocessors; Multicomputers; SISD, SIMD, MISD, MIMD. Fundamentals of current processors. Mobile computing: Typical pipeline on mobile processor;Out-of-order architectures;ARM Big.Little Architecture. Structured assembly programming: lab work augmenting the theoretical aspects.

| Assessment Breakdown | % |
|----------------------------------|--------|
| Continuous Assessment | 50.00% |
| End of Module Formal Examination | 50.00% |

| Continuous Assessment | | | | | | |
|-----------------------|--|----------------------|---------------|--------------------|--|--|
| Assessment Type | Assessment Description | Outcome addressed | % of total | Assessment Date | | |
| Other | In Class and/or In Lab Continuous Assessment | 1,2,3,4,5 | 50.00 | n/a | | |

No Project No Practical

| End of Module Formal Examination | | | | | | | |
|----------------------------------|------------------------|----------------------|---------------|-----------------|--|--|--|
| Assessment Type | Assessment Description | Outcome addressed | % of total | Assessment Date | | | |
| Formal Exam | Formal Final Exam | 1,2,3,4,5 | 50.00 | End-of-Semester | | | |

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



ZCOM H2201: Computer Architecture

Module Workload

| Workload: Full Time | | |
|-------------------------|-----------------------|---------------------------------------|
| Workload Type | Frequency | Average Weekly Learner Workload |
| Lecture | 30 Weeks per Stage | 3.00 |
| Laboratory | 30 Weeks per Stage | 2.00 |
| Estimated Learner Hours | 30 Weeks per Stage | 1.67 |
| | Total Hours | 200.00 |