MODULE **DESCRIPTOR**

MODULE TITLE	DIGITAL ELECTRONICS		
MODULE CODE	EL1242 (L4)	**CREDIT VALUE**	20 CREDITS (10 ECTS)
CAMPUS	UCLAN CYPRUS		
SCHOOL	SCHOOL OF SCIENCE		

MODULE **AIMS**

Provide understanding of basic concepts applicable to digital systems and microprocessor systems.

MODULE **CONTENT**

Introduction to Digital Electronics and Microprocessors.

Digital Electronics
Number systems; Binary arithmetic; Boolean algebra, logic theory, minimisation techniques; Combinational and sequential logic. Analysis of logic technologies using CMOS and TTL techniques including for example fanout, propagation delay and power dissipation. Hardware design of synchronous and asynchronous logic; flip-flops, registers, counters.

Microprocessors and Microcontrollers

Basic minimum system, (CPU, memory, and I/O), Von Neumann and Harvard architectures. Memory technologies, memory mapping, address decoding.

Programming languages for microprocessors/microcontrollers, development tools and environments.

INTENDED **LEARNING OUTCOMES**

On successful completion of this module a student will be able to:	
1.	Design combinational and sequential logic systems from specifications, and analyse their behaviour.
2.	Explain the operation of a basic microprocessor system, relating the description to the architecture of the processor.
3.	Interpret software used in a processor based system
4.	Design hardware and software to meet the specification for a simple processor based system

TEACHING **METHODS**

Lectures, tutorials and laboratory work are used to deliver the syllabus. The lectures introduce the necessary theoretical & conceptual content. Regular tutorial exercises are used to support the lectures and contextualise and reinforce comprehension of the factual content through application.

Laboratory sessions are used primarily to develop competencies in two main areas:
(a) the design & synthesis of combinatorial & sequential logic circuits
(b) familiarisation with and use of development tools to design test and debug assembly language programs running on microcontroller hardware
In both areas the laboratory work naturally leads in to an associated design & implementation assignment consolidating and extending the taught material. Typically the µController assignment involves integration of knowledge from across several co-requisite modules.

ASSESSMENT **METHODS**

The module is assessed through a Practical Assignment and a Written exam.