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Title: Microprocessors and Software  
Status: Definitive  
Code: **4502ELESBC** (120208)  
Version Start Date: 01-08-2016

Owning School/Faculty: Electronics and Electrical Engineering  
Teaching School/Faculty: The Sino-British College

Team	Leader
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**Academic Level:** FHEQ4      **Credit Value:** 20      **Total Delivered Hours:** 74  
**Total Learning Hours:** 200      **Private Study:** 126

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	48

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Exam	70	2
Report	AS1	Low Level Programming	15	
Report	AS2	Operating systems and Development	15	

### Aims

*Provide an overview of the operation of modern microprocessors and the*

*mechanisms used to represent and process information. Design and implement applications written in both low level and high level languages.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Describe the techniques applied to represent information within a Microprocessor.
- 2 Identify the fundamental components of a Microprocessor.
- 3 Describe the instruction set of a computer contrasting RISC and CISC approaches.
- 4 Produce an application that demonstrates an understanding of the registers that constitute a Microprocessor.
- 5 Describe the role of modern Operating Systems in embedded, mobile, desktop and server environments.
- 6 Produce an application that utilises a high level language and interacts with an operating system.

## **Learning Outcomes of Assessments**

The assessment item list is assessed via the learning outcomes listed:

Exam	1	2	3	5
Low Level Programming	5	6		
Operating Systems & Dev	3	4		

## **Outline Syllabus**

*Binary, HEX, 2s Compliment, big and little endian, IEEE 754, ASCII, UNICODE.*

*Processor core and cache hierarchies, Buses, Memory Organisation, Cache Coherency, Multicore.  
X86, ARM instruction Sets, 80% 20% ratio.*

*Application Scheduling, Security, Interrupt Handling, Libraries, Communications.  
Variables, Arrays, Iteration, Selection, I/O, Structures, Dynamic memory, flow charts.*

*Assembly Programming, Memory transfers, interaction with IO.*

## **Learning Activities**

Lecture, demonstration and practical activities applying topics discussed.

## **Notes**

This module introduces the fundamentals of Computer architecture and the development of High and low level software.