

## Liverpool John Moores University

Title: Microprocessors and Software  
Status: Definitive  
Code: **4302ELE** (121415)  
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering  
Teaching School/Faculty: Engineering

Team	Leader
Qian Zhang	Y
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**Academic Level:** FHEQ4      **Credit Value:** 20      **Total Delivered Hours:** 68  
**Total Learning Hours:** 200      **Private Study:** 132

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	11
Practical	55

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Exam	60	2
Report	AS1	Programming	40	

### Aims

*Provide an overview of the operation of modern microprocessors/microcontrollers 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. Describe the instruction set of a computer contrasting RISC and CISC approaches.
- 2 Identify the fundamental components of a Microprocessor. Demonstrate an understanding of the registers that constitute a Microprocessor.
- 3 Describe the role of modern Operating Systems in embedded, mobile, desktop and server environments.
- 4 Specify and design microprocessor applications, then implement them utilising high or low level languages

### **Learning Outcomes of Assessments**

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

Exam	1	2	4	3
Programming	1	2	4	

### **Outline Syllabus**

*Binary, HEX, 2s Complement, Number endianness, IEEE 754, ASCII, UNICODE.*

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

*Application Scheduling, Security, Interrupt Handling, Libraries, Communications. Variables, Arrays, Iteration, Selection, Interaction with I/O, Structures, Flow charts.*

### **Learning Activities**

Lecture, demonstration and practical activities applying topics discussed.

### **Notes**

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