

Liverpool John Moores University

Title: Embedded Systems
Status: Definitive
Code: **6302SBC** (124884)
Version Start Date: 01-08-2021

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

Team	Leader
Russell English	Y
Princy Johnson	

Academic Level: FHEQ6
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	70	2
Report	Report	Report	30	

Aims

To provide both the theoretical and practical skills in the design and development of advanced embedded systems.

Learning Outcomes

After completing the module the student should be able to:

- 1 Design and implement complex integrated hardware and software solutions to engineering problems.
- 2 Apply the software development lifecycle to embedded projects.
- 3 Compare and contrast microprocessor hardware as to its suitability to specific engineering applications.
- 4 Evaluate the use of real-time operating systems.
- 5 Analyse the security implications of network connectivity in embedded applications.

Learning Outcomes of Assessments

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

Exam	3	4	5
Embedded Systems Project	1	2	3

Outline Syllabus

Design Application: Circuit Schematics, Flow charts, Pseudo code. Hardware design.

High level language constructs: variables, conditional statements, loops, string handling, input-output, data structures, classes, inheritance, file handling, functions, Arrays, conditional statements, loops, string handling, input-output, data structures, functions.

Development Lifecycle: Design, Development, Testing, Maintenance.

Microprocessor Hardware: Power, price, energy, capability.

RTOS: Cost, Security, Driver support, development time.

Security: Hacking threats, Maintenance/Updates, SCADA.

Learning Activities

Lecture, demonstration and practical activities applying topics discussed.

Notes

This module will provide students with the capability to design and develop an embedded solution to an engineering problem.