Liverpool John Moores University

Title:	Digital and Analogue Electronics, Microprocessors and Software
Status:	Definitive
Code:	**4502ENGIYO** (120262)
Version Start Date:	01-08-2016

Owning School/Faculty: Electronics and Electrical Engineering
Teaching School/Faculty: Study Group

Team	Leader
Christian Matthews	

Academic Level:	FHEQ4	**Credit Value:**	20	**Total Delivered Hours:**	92
Total Learning Hours:	200	**Private Study:**	108		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	60
Practical	15
Tutorial	15

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Exam 2 hours	70	2
Report	AS2	Low Level Programming Report	15	
Report	AS3	Electronics Report	15	

Aims

To provide an introduction to transistors and the small-signal equivalent circuits, the use of operational amplifiers and the operation of combinational and sequential digital logic circuits.

To provide an overview of the operation of modern microprocessors and the

mechanisms used to represent and process information.

To 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. Analyse electronics by using diode and transistor characteristics for simple amplifier design and describe circuits design for analogue signal processing
2. Examine electronics through analysing and designing basic combinational digital circuits and identify sequential digital circuits and applications
3. Describe the techniques applied to represent information within a Microprocessor and identify the fundamental components of a Microprocessor
4. Describe the instruction set of a computer contrasting RISC and CISC approaches
5. Produce an application that demonstrates an understanding of the registers that constitute a Microprocessor

Learning Outcomes of Assessments

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

Exam	1	2	3	4

Programming report	5

Electronics report	3

Outline Syllabus

Analogue Fundamentals
Transistors and op-amps
Digital logic and combinational circuits
Sequential circuits
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.

Notes

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