Liverpool John Moores University

Title:	MICROELECTRONIC SYSTEM DESIGN
Status:	Definitive
Code:	**7013ENG** (105389)
Version Start Date:	01-08-2016

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

Team	Leader
Wei Zhang	Y

Academic Level:	FHEQ7	**Credit Value:**	20	**Total Delivered Hours:**	36
Total Learning Hours:	200	**Private Study:**	164		

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	6
Practical	24
Tutorial	6

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Laboratory based design exercises and reports	30	
Report	AS2	mini design project	70	

Aims

To gain knowledge and understanding of a range of advanced VLSI design and analysis methods.
To develop the design and test techniques required for modern digital microelectronic systems.

Learning Outcomes

After completing the module the student should be able to:

1. Master the concepts, principles and theories of microelectronic circuit and system design appropriate to the postgraduate level
2. Develop and strengthen the skills related to VLSI design
3. Have knowledge and understanding of appropriate hardware and software used in the field of Microelectronic System Design
4. Develop advanced skills in microelectronic system design, at the gate and and analysis
5. Underpin their education in Microelectronic System Design, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies.

Learning Outcomes of Assessments

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

Labwork   1   2   3

Design project   4   5

Outline Syllabus

Review of combinational and sequential circuit design.
Semi-custom digital system design, FPGA based digital system design.
Digital system design, simulation and synthesis using VHDL/Verliog.
Microelectronic system design at register and system levels.
Design of test bench and build-in test structure.
Simulation, implementation and testing of medium scale systems.
Design of microelectronic systems utilizing embedded microprocessors and memories.
Emerging technologies, future important devices, new design methods.

Learning Activities

Lectures supported by handouts & tutorials where appropriate.
Practical sessions will use software packages and hardware development boards for circuit design and development.
An individual student report is required for the coursework.

Notes

This level 7 module gives the student an advanced knowledge of the design and test techniques required for modern digital microelectronic systems. Extensive

practical designs are carried out with the help of modern ECAD software and hardware development boards.