IC System Design

Module Information

2022.01, Approved

Summary Information

Module Code	7542ELEMST
Formal Module Title	IC System Design
Owning School	Engineering
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Sri Lanka Institute of Information Technology

Learning Methods

Learning Method Type	Hours
Lecture	11
Practical	22

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-PAR	PAR	January	12 Weeks

Aims and Outcomes

Aims	The module aims to gain knowledge and understanding of a range of advanced VLSI design and analysis methods and to develop the design and test techniques required for modern digital microelectronic systems.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Critically appraise concepts, principles and theories of IC circuit and system design to the appropriate level.
MLO2	2	Critically appraise appropriate hardware and software used in the field of IC System Design.
MLO3	3	Develop advanced skills in IC system design, at the gate, RTL and system level.
MLO4	4	Critically evaluate IC System Design, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies.

Module Content

Outline Syllabus	1. Verilog based designReview of combinational and sequential circuit design.Semi-custom digital system design, FPGA based digital system design.Digital system design, simulation and synthesis using Verliog HDL.2. IC system designIC system design at register and system levels.Considerations for high speed systems, metastability and clock distributionDesign of test bench and build-in test structure.Simulation, implementation and testing of medium scale systems.Design of nano electronic systems utilising embedded microprocessors and memories.Emerging technologies, future important devices, new design methods.
Module Overview	
Additional Information	This level 7 module gives the student an advanced knowledge of the design and test techniques required for modern digital IC systems. Extensive practical designs are carried out with the help of modern ECAD software and hardware development boards.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Report	100	0	MLO1, MLO2, MLO3, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Wei Zhang	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings