Digital Design and Test

Module Information

2022.01, Approved

Summary Information

Module Code	7344ELEM
Formal Module Title	Digital Design and Test
Owning School	Engineering
Career	Postgraduate Taught
Credits	10
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	11
Tutorial	6

Module Offering(s)

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

Aims and Outcomes

Aims	To develop skills related to digital design.To develop advanced skills in digital circuit design, at the transistor and gate levels.To develop expertise in modern digital electronic circuit design and testing.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Design complex modern digital electronic circuits.
MLO2	2	Realize state-of-the-art MOS design methods and design rules
MLO3	3	Comprehensively apply the principles of self testing within complex digital circuit designs

Module Content

Outline Syllabus	Review of clocked and pulse mode circuits, sequential circuit design. Asynchronousdigital circuit design, fundamental mode circuit design. Design for test, Built-in SelfTest (BIST/BIT), Boundary Scan testing, IEEE 1149.1 and variants.Review of MOS technology, properties of MOS circuits, MOS Design rules, Stickdiagram design, Transistor level design of MOS logic functions.Semi-custom design, Selection of PLA/PLD/CPLD/FPGA/ROM based designs.Languages for digital design, levels of design and simulation, introduction tolanguages for digital design, e.g. VHDL, Verliog, Chipwise, Palasm, Abel.Emerging technologies, future important devices, new design methods.
Module Overview	This module gives the student an advanced knowledge of the design and test techniques required for modern digital electronic integrated circuits at the transistor, register and silicon level. Practical design is carried out with the help of modern ECAD software.
Additional Information	This level 7 module gives the student an advanced knowledge of the design and test techniques required for modern digital electronic integrated circuits, at the transistor, register and silicon level. Practical design is carried out with the help of modern ECAD software.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	100	1.5	MLO1, MLO2, MLO3

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