LIVERPOOL JOHN MOORES UNIVERSITY

Consumer Electronics

Module Information

2022.01, Approved

Summary Information

Module Code	6307ELE
Formal Module Title	Consumer Electronics
Owning School	Engineering
Career	Undergraduate
Credits	10
Academic level	FHEQ Level 6
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	6
Tutorial	11

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	To gain knowledge and understanding of modern consumer electronic devices andsystems. To foster the awareness of the challenge and opportunity for themicroelectronic industry

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Demonstrate knowledge of modern consumer electronic devices and systems
MLO2	2	Analyse the performance of advanced devices and systems
MLO3	3	Show awareness of MOS qualification techniques
MLO4	4	Argue the future challenge and opportunity in this rapidly changing area

Module Content

Outline Syllabus	Nano-meter transistors and microprocessors: Moore's law, leakage, short channeleffects, challenges and opportunities Memories: SRAM and DRAM, bitcell structures, System, Read and Write, Noise Margin, Device Variation and mismatch.Flash memory: Structure, programming, charge storage, erasing, reading, memoryretention and endurance, the 3D future generationPhoto-detectors: Structure and principle, solar cells, sensitive volume, PIN and APD,bandwidth and noisesCCDs and Cameras: Structure, two phase, three phase, carrier generation, storage,transferring and detectionTFTs and LCDs: Amorphous-Si TFTs and Poly-Si TFTs, Passively addressed LCDsand actively addressed LCDs, Leakage and speed.Future of microelectronic and computer industries: New materials and devices,International Roadmap
Module Overview	
Additional Information	This module will provide undergraduates with a comprehensive understanding ofstate-of-the-art consumer electronic devices. It will also foster the awareness ofstudents in the future challenges and opportunities in the industry.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Exam	100	2	MLO1, MLO2, MLO3, MLO4

Module Contacts

Module Leader

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

Partner Module Team

Contact Name	Applies to all offerings	Offerings