Liverpool John Moores University

Title:	Consumer Electronics
Status:	Definitive
Code:	**6007ELE** (120061)
Version Start Date:	01-08-2019
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Maritime and Mechanical Engineering

Team	Leader
Jian Zhang	Y
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Academic Level:	FHEQ6	**Credit Value:**	10	**Total Delivered Hours:**	44
Total Learning Hours:	100	**Private Study:**	56		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	6
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Exam	70	2
Essay	Essay	Essay	30	

Aims

To gain knowledge and understanding of modern consumer electronic devices and systems. To foster the awareness of the challenge and opportunity for the microelectronic industry

Learning Outcomes

After completing the module the student should be able to:

1	Demonstrate knowledge of modern consumer electronic devices and systems
2	Analyse the performance of advanced devices and systems
3	Show awareness of MOS test and qualification techniques
4	Argue the future challenge and opportunity in this rapidly changing area

Learning Outcomes of Assessments

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

Exam	1	2	3
Essay	1	2	4

Outline Syllabus

Nano-meter transistors and microprocessors: Moore's law, leakage, short channel effects, challenges and opportunities
Memories: SRA and DRAM, bitcell structures, System, Read and Write, Noise Margin, Device Variation and mismatch.
Flash memory: Structure, programming, charge storage, erasing, reading, memory retention and endurance, the future generation
Photo-detectors: Structure and principle, solar cells, sensitive volume, PIN and APD, bandwidth and noises
CCDs and Cameras: Structure, two phase, three phase, carrier generation, storage, transferring and detection
TFTs and LCDs: Amorphous-Si TFTs and Poly-Si TFTs, Passively addressed LCDs and actively addressed LCDs, Leakage and speed.

Future of microelectronic and computer industries: New materials and devices, International Roadmap

Learning Activities

Typically by a series of lectures, tutorials, researching for information and analysis.

Notes

This module will provide undergraduates with a comprehensive understanding of state-of-the-art consumer electronic devices. It will also foster the awareness of students in the future challenges and opportunities in the industry.