Liverpool John Moores University

Title:	ADVANCED DEVICES AND SYSTEMS
Status:	Definitive
Code:	**6017ENG** (106222)
Version Start Date:	01-08-2016
Owning School/Faculty:	Maritime and Mechanical Engineering
Teaching School/Faculty:	Maritime and Mechanical Engineering

Team	Leader
Jian Zhang	Y

Academic Level:	FHEQ6	**Credit Value:**	12	**Total Delivered Hours:**	44.5
Total Learning Hours:	120	**Private Study:**	75.5		

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	AS1	Examination	80	2.5
Essay	AS2	Coursework	20	

Aims

To enhance knowledge and understanding of modern electronic devices and systems.
To develop intellectual ability to analyze electronic devices and systems.
To familiarize with practical issues in fabrication and testing.
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 electronic devices and systems
2	Analyse the performance of advanced devices and systems
3	Select components and systems for engineering applications
4	Recognize 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	4	
CW	1	2	3	4

Outline Syllabus

A Review of microelectronic industry: How did it happen?
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
Voltage controlled oscillators (VCOs) and Phase Locked Loops, AM and FM Modulation and De-Modulation
VLSI Fabrications: Processing flow and the state-of-the-art manufacturing techniques
Nano-meter transistors: challenges and opportunities
Future of microelectronic and computer industries: International Roadmap

Learning Activities

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

Notes

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