MODULE SPECIFICATION

Part 1: Information			
Module Title	Materials for Semiconductors		
Module Code	UFMFFR-30-3	Level	Level 6
For implementation from	2019-20		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

Educational Aims: This module will cover the different properties (electrical, optical, and magnetic) of electronic materials in relation to their importance in the semiconductor industry and their technological applications such as wafer devices, solid-state fuel cells, lithium secondary batteries, light-emitting diodes and solid-state lasers. This will include semiconductors, electronic ceramics, conducting polymers and optical and magnetic materials. This module will also cover processes and operations in semiconductor manufacturing.

Outline Syllabus: Indicative Content:

Material Science Concepts
Electrical and thermal Conduction of Solids
Modern theory of solids
Semiconductors electronic ceramics and polymers.
Dielectric materials and Insulation
Magnetic properties of materials
Optical properties of materials
Superconductivity
Processes in Semiconductor Manufacturing

Teaching and Learning Methods: See Learning Outcomes.

Part 3: Assessment			
Component A will focus on technical aspects of the material studied with an end of module examination covering extended questions on the evaluation and comparison of engineering designs involving semiconductor applications. Component B will involve students undertaking an investigation of the application of semiconductor materials relating to processes, applications or specific devices in industry. The activity will result in a group report involving groups of 2 or 3 students. Individual contributions will be determined via a peer review process. The resit component B assessment will involve an individual critical appraisal of the work carried out for the 1st sit group report activity.			
First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Report - Component B		50 %	Group report
Examination - Component A	✓	50 %	Written examination (2 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Report - Component B		50 %	Individual report
Examination - Component A	✓	50 %	Written examination (2 hours)

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will achieve the following learning outcomes:

Module Learning Outcomes	**Reference**
Describe in detail the fundamental properties of electronic materials and their roles and applications in modern technology.	MO1
Explain the fundamental principles underlying the design and operation of various electronic devices.	MO2
Research and investigate processes and applications involving semiconductor materials in the electronics industry.	MO3
Compare and critically appraise the processes and operations involved in semiconductor manufacturing.	MO4

Contact Hours

Independent Study Hours:

Independent study/self-guided study	46
Total Independent Study Hours:	46

Placement Study Hours:

	Placement	56
	Total Placement Study Hours:	56
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	48
	Total Scheduled Learning and Teaching Hours:	48
	Hours to be allocated	300
	Allocated Hours	150
Reading List	*The reading list for this module can be accessed via the following link:* https://uwe.rl.talis.com/index.html	

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Electrical and Electronic Engineering {Top-Up} [May][PT][AustonSingapore][1.3yrs] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [May][FT][AustonSingapore][1yr] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [Feb][PT][AustonSingapore][1.3yrs] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [Feb][FT][AustonSingapore][1yr] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [Oct][PT][AustonSingapore][1.3yrs] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [Oct][FT][[AustonSingapore][1yr] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [Oct][FT][AustonSriLanka][1yr] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [Oct][PT][AustonSriLanka][1.3yrs] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [Feb][FT][AustonSriLanka][1yr] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [Feb][PT][AustonSriLanka][1.3yrs] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [May][FT][AustonSriLanka][1yr] BEng (Hons) 2019-20
Electrical and Electronic Engineering {Top-Up} [May][PT][AustonSriLanka][1.3yrs] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [Sep][FT][AustonSingapore][1yr] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [Sep][PT][AustonSingapore][2yrs] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [Feb][PT][AustonSingapore][2yrs] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [May][PT][AustonSingapore][2yrs] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [Feb][FT][AustonSingapore][1yr] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [May][FT][AustonSingapore][1yr] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [Sep][FT][AustonSriLanka][1yr] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [Feb][FT][AustonSriLanka][1yr] BEng (Hons) 2019-20

Mechanical Engineering (Mechatronics) {Top-Up} [May][FT][AustonSriLanka][1yr] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [Sep][PT][AustonSriLanka][2yrs] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [Feb][PT][AustonSriLanka][2yrs] BEng (Hons) 2019-20
Mechanical Engineering (Mechatronics) {Top-Up} [May][PT][AustonSriLanka][2yrs] BEng (Hons) 2019-20