



MODULE SPECIFICATION

Part 1: Information			
Module Title	Power Electronics		
Module Code	UFMF3A-15-M	Level	Level 7
For implementation from	2019-20		
UWE Credit Rating	15	ECTS Credit Rating	7.5
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
<p>Overview: Pre-requisites: students must take one out of Power Systems UFME66-20-3 OR Alternative Energy UFMEB4-20-3 .</p> <p>Educational Aims: See Learning Outcomes</p> <p>Outline Syllabus: The syllabus includes:</p> <p>Introduction to Power Semiconductor Devices: Diodes, MOSFETs, IGBTs, Thyristors</p> <p>Characteristics and Driving Circuits of Power Semiconductors</p> <p>Controlled and Un-controlled Rectification</p> <p>Introduction to converters; Choppers: Buck and Boost Converters</p> <p>Introduction to Inverters (DC/AC); Multilevel Inverters</p> <p>Electric Motor Drives and control: Adjustable and vector control</p> <p>High Voltage DC Transmission</p>

STUDENT AND ACADEMIC SERVICES

FACTS (Flexible AC Transmission Systems)

Power Electronics for Wind, Solar and Hydro: Grid Interconnection

Teaching and Learning Methods: A combination of lectures, guest lectures, tutorials, and computer simulation work/demonstration will be used to present and reinforce the subject matter. Students will be expected to learn independently, using the available simulation packages and directed study outside taught classes.

Part 3: Assessment

See Assessment.

First Sit Components	Final Assessment	Element weighting	Description
Written Assignment - Component B		50 %	Assignment
Examination - Component A	✓	50 %	Examination (180 minutes)
Resit Components	Final Assessment	Element weighting	Description
Written Assignment - Component B		50 %	Assignment
Examination - Component A	✓	50 %	Examination (180 minutes)

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
	The operating principles and characteristics of the three main classes of power electronic converters – DC/DC, AC/DC and DC/AC, including the methods for calculating steady state operating conditions and component values. Furthermore, appreciate the wider context of the subject area in terms of FACTS (Flexible AC Transmission Systems), power conversion requirements etc	MO1
	Confident participation in new developments of Power Electronic systems	MO2
	Designing the simulation case study of Power Electronic systems	MO3
	Evaluating the designed circuit performance	MO4
	Application of electrical and mathematical principles to explain and analyse the operation of single and three phase power electronic converters	MO5
	Undertake systematic analysis of Power engineering problems and develop solutions based on scientific and mathematical principles	MO6
	Awareness of professional literature: perform literature search; generalisation of subject core	MO7
	Communication	MO8
	Problem formulation and decision making	MO9
	Research and presentation skills	MO10
Self-management: planning and undertaking learning activities based on module resources	MO11	

STUDENT AND ACADEMIC SERVICES

Contact Hours	Independent Study Hours:	
	Independent study/self-guided study	113
	Total Independent Study Hours:	113
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	37
	Total Scheduled Learning and Teaching Hours:	37
	Hours to be allocated	150
	Allocated Hours	150
Reading List	<p>The reading list for this module can be accessed via the following link:</p> <p>https://uwe.rl.talis.com/index.html</p>	

Part 5: Contributes Towards

This module contributes towards the following programmes of study: