MODULE SPECIFICATION

Part 1: Information			
Module Title	Power Electronics		
Module Code	UFMF3A-15-M	Level	Level 7
For implementation from	2018-19		
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		
Contributes towards			
Module type:	Standard		
Pre-requisites	Alternative Energy 2017-18, Power Systems 2017-18		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
Overview: Pre-requisites: students must take one out of Power Systems UFME66-20-3 OR Alternative Energy UFMEB4-20-3 . **Educational Aims:** See Learning Outcomes **Outline Syllabus:** The syllabus includes: Introduction to Power Semiconductor Devices: Diodes, MOSFETs, IGBTs, Thyristors Characteristics and Driving Circuits of Power Semiconductors Controlled and Un-controlled Rectification Introduction to converters; Choppers: Buck and Boost Converters

Introduction to Inverters (DC/AC); Multilevel Inverters

Electric Motor Drives and control: Adjustable and vector control

High Voltage DC Transmission

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 be able to:

	Module Learning Outcomes
MO1	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
MO2	Confident participation in new developments of Power Electronic systems
MO3	Designing the simulation case study of Power Electronic systems
MO4	Evaluating the designed circuit performance

	MO5	Application of electrical and mathematical principles to explain and analyse the operation of single and three phase power electronic converters
	MO6	Undertake systematic analysis of Power engineering problems and develop solutions based on scientific and mathematical principles
	MO7	Awareness of professional literature: perform literature search; generalisation of subject core
	MO8	Communication
	MO9	Problem formulation and decision making
	MO10	Research and presentation skills
	MO11	Self-management: planning and undertaking learning activities based on module resources

Contact Hours

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

The reading list for this module can be accessed via the following link:

https://uwe.rl.talis.com/index.html