MODULE SPECIFICATION

Part 1: Information			
Module Title	Modelling and Simulation		
Module Code	UFMFEJ-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

Educational Aims: In this module students will study the design and analysis of dynamic wind turbine systems and power networks using simulation techniques.

In addition, the educational experience may develop through practice but not formally assess self-management and independent study

Outline Syllabus: The syllabus includes:

Understanding and fully functioning with simulation software such as PSCAD, Matlab (PowerSim plus Simulink block sets) or any other used in physical systems modelling.

Dynamic modelling and simulating Wind Power components using PSCAD, Matlab (Simulink Block sets and tool box of PowerSIM)

Dynamic Modelling and simulating Induction and Synchronous Machines

Short, Medium and Long Transmission Line Modelling and simulating

Cable Modelling in time and phase domains using software simulation

Dynamic Modelling and simulation of Transformers

Dynamic modelling and simulating loads

Dynamic Modelling and simulating of Circuit breakers and Switches

Application of simulation techniques to engineering scenarios.

Teaching and Learning Methods: Underlying theory and concepts will be delivered using lectures with practical classes used to develop experience and practice of modelling and simulation. It is in these practical sessions that students will use simulation packages such as PSCAD, EMTP-ATP, MATLAB or ERACs. During each tutorial session each student will be required to undertake a design task to develop and test design skills with tasks during the week used to consolidate understanding of theory.

In addition to 36 hours of scheduled contact, students will be expected to spend (typically) 114 hours in independent study, preparation for classes, assimilation of knowledge and skills development, completion of lab reports and completion of assessments.

Scheduled learning includes lectures, practical classes.

Independent learning includes hours engaged with essential reading, assignment preparation and completion etc. These sessions constitute an average time per level.

Part 3: Assessment

The assessment consists of a portfolio of lab reports and a laboratory based examination. This content of this module requires practical experience to master both the concepts and the application of these concepts. This is supported by the setting of regular tasks each week. An end of module practical examination is used to assess the student's ability to engage in design activities under controlled conditions.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		50 %	Portfolio (lab reports)
Examination - Component A	✓	50 %	Lab-based written examination (3 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		50 %	Portfolio (lab reports)
Examination - Component A	✓	50 %	Lab-based written examination (3 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
Apply industry-relevant techniques used in the design and modelling of wind turbine systems	MO1
Use a variety of computer software applications to implement the design cycle of a dynamic wind turbine system and power network	MO2
Apply simulation results to practical engineering problems and make informed judgements on how to then adapt a design to create the most appropriate solution	MO3
Critically evaluate computer simulation and modelling techniques in a given situation	MO4

Contact Hours

Independent Study Hours:	
Independent study/self-guided study	114
Total Independent Study Hours:	114
Scheduled Learning and Teaching Hours:	
Face-to-face learning	36
Total Scheduled Learning and Teaching Hours:	36
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

Part 5: Contributes Towards

This module contributes towards the following programmes of study: