MODULE SPECIFICATION

Part 1: Information			
Module Title	Power Systems Analysis		
Module Code	UFMFAA-15-3	Level	Level 6
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

Overview: The study of Power Systems Analysis forms one of the disciplines that underpin many areas of modern engineering. This module is designed to provide a solid foundation of knowledge for infrastructure of future Grids.

Educational Aims: In addition to the learning outcomes, the educational experience may explore, develop, and practise but not formally discretely assess the following:

Awareness of professional literature.
Problem formulation and decision making.
Self-management skills.

Outline Syllabus: Structure of Power Systems, The One Line diagram and the Impedance or reactance diagram, Per Unit Systems, Representation of Loads and Complex Power.

Symmetrical Component Transformation, Sequence Impedances and sequence Networks, Construction of Sequence Networks.

Short, Medium and Long Transmission Lines, Interpretation of the Line Equations, Equivalent circuit representation.

Analysis of Symmetrical and Unsymmetrical Faults, Transient on a Transmission Line.

Ybus Matrix, Gauss-Seidel Method and Newton-Raphson Method.

Components of Protection Schemes; function of protection systems; distance protection.

Teaching and Learning Methods: Lectures will address both the theory and practical relevance of power systems. Numerous examples will be discussed to illustrate theoretical concepts. Lectures will cover principles, backed up by directed reading from books. Tutorial sessions will consolidate principles presented in lectures.

Feedback and student support is given during worked examples and past papers will be discussed during revision lectures towards the end of the module.

Scheduled learning includes lectures, tutorials, and PC workshops.

Independent learning includes hours engaged with essential reading, exercise preparation and completion etc.

Contact: 36 hours
Assimilation and skill development: 70 hours
Coursework preparation: 0 hours
Exam preparation: 44 hours
Total: 150 hours

Part 3: Assessment

Component A:
The three-hour end of semester exam is used to independently test the ability of students in controlled conditions in which a total of 100% marks will be contributed from element A. The exam will give students the opportunity to demonstrate their level of understanding and cognitive skills in the subject.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	100 %	Exam (3 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	100 %	Exam (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
The basic concept of per unit systems, fault analysis and load flow	MO1
The power system parameters in steady state and transient state	MO2
How to apply the theory of power flow to simple models of power systems for simple design principles of a network	MO3

Contact Hours

Independent Study Hours:	
Independent study/self-guided study	100
Total Independent Study Hours:	100
Scheduled Learning and Teaching Hours:	
Face-to-face learning	50
Total Scheduled Learning and Teaching Hours:	50
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: