MODULE SPECIFICATION

Part 1: Information			
Module Title	Advanced Nuclear Science and Project Management		
Module Code	UFMFYP-30-2	Level	Level 5
For implementation from	2018-19		
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		
Contributes towards			
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
Overview: This module focusses on impacts of radiation inducing issues over time and project management of the decommissioning of objects made of such material. The key areas for study are radiation interaction with media, lattice defects, radiolysis and biological consequences of radiation exposure in a decommissioning environment. The other parts concern how materials change over time in radiation environments and the practical and human considerations that must be made when decommissioning. **Educational Aims:** This syllabus is designed to give advanced nuclear science, engineering and project management knowledge for the selection of nuclear materials and methods for planning and controlling a project in the nuclear environment. **Outline Syllabus:** The topics covered in this unit are: Advanced Nuclear Science: Nuclear Physics such as daughter products and their effects

Nuclear Chemistry such as the study of alternative fuel and coolant types
Nuclear Biology such as alternative shielding and ecological effects

Nuclear Material Dynamics:
Metal and Alloy Radiation Hardening and Creep
Polymer Aging and Oxidation
Ceramics Irradiation and Restructuring

Project Management:
Project Initiation and Planning
Project Control
Project Completion
Moral Competency
Nuclear Decommissioning Principles

Teaching and Learning Methods: See Assessment

Part 3: Assessment

Component A: Viva – The learners will sit before a panel of academics and nuclear decommissioning experts to defend their decommissioning plan against defined characteristics for success.

Component B: Decommissioning Project Plan – The learners formulate their own decommissioning plan from a case study by the application of nuclear science and engineering with project management theory. They will analyse the impact of environment and radiation exposure on materials commonly encountered in decommissioning.

The resit assessment tasks for this module will involve a rework and reflective evaluation, comprising an additional 500 words of element B1, of the work carried out in the original task.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		75 %	Decommissioning Project Plan (2500 words)
Presentation - Component A	✓	25 %	Viva (30 minutes)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		75 %	Decommissioning Project Plan (3000 words)
Presentation - Component A	✓	25 %	Viva (30 minutes)

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will be able to:

	Module Learning Outcomes
MO1	Conduct nuclear physics, chemistry, and biological analysis calculations.
MO2	Explain the principles related to advanced nuclear science and radiation damage.
MO3	Explain the dynamic behaviours of in-service nuclear materials.
MO4	Create appropriate estimates for nuclear decommissioning applications.

Contact Hours

Contact Hours	
Independent Study Hours:	
Independent study/self-guided study	228
Total Independent Study Hours:	228
Scheduled Learning and Teaching Hours:	
Face-to-face learning	72
Total Scheduled Learning and Teaching Hours:	72
Hours to be allocated	300
Allocated Hours	300

Reading List

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

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