

Liverpool John Moores University

Title: Nuclear Lifecycle, Hazards and Risks
Status: Definitive
Code: **7559RTC** (120392)
Version Start Date: 01-08-2019

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: Risktec Solutions

Team	Leader
Alan Wall	Y

Academic Level: FHEQ7 **Credit Value:** 10 **Total Delivered Hours:** 16.5
Total Learning Hours: 100 **Private Study:** 83.5

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	8
Online	.5
Tutorial	8

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	An essay question comprising several component parts, based around a case study, up to 4,000 words long.	95	
Test	AS2	Individual and group activities e. g. quiz, forum	5	

Aims

To provide students with an overview of the nuclear lifecycle, its risks and hazards and the standard risk mitigation techniques.

Learning Outcomes

After completing the module the student should be able to:

- 1 Identify and analyse the nuclear risks/hazards associated with a process or facility relevant to any stage of the nuclear cycle
- 2 Quantify the risk to human health for simple accident scenarios
- 3 Devise an effective means of avoiding each hazard or mitigating its consequences.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

4000 word essay	1	3
Individual and group work	2	

Outline Syllabus

Introduction to the nuclear lifecycle

Risk and safety regulations in the nuclear industry

Hazards and controls in fuel manufacture and transport – criticality

Hazards and controls in reactor operation – overpower/loss-of-cooling/loss-of-containment

Hazards and controls in transport and storage of irradiated fuel – direct radiation/dispersion

Hazards and controls in reprocessing irradiated fuel – criticality/loss-of-containment

Hazards and controls in long term storage of radioactive waste

Learning Activities

A combination of lectures, exercises and supported self study.

Notes

This module aims to provide students with an overview of the lifecycle of a nuclear power facility, its risks and hazards, risk-related regulations and the standard risk mitigation techniques.

Assessment is in the form of an essay combined with activities (e.g. exercises,

discussions, etc.). The delivery modes for the module elements are explained below.

Lecture (using slides and notes): will be delivered by classroom based teacher (face to face) or online self-study (distance learning) or mixture of the two (blended learning).

Tutorial/Activities (exercises and reviews): will be delivered by classroom based teacher (face to face) or online activities with teacher feedback/virtual classroom (distance learning) or mixture of the two (blended learning).

Tutor supported online: will be delivered by email support prior to assessment submission (face to face) or tutor feedback activities, virtual classrooms and email support (distance learning) or mixture of the two (blended learning).