

Liverpool John Moores University

Title: Engineered Risk Control Systems and Performance (Nuclear)
Status: Definitive
Code: **7547RTC** (120380)
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 an understanding of Engineered Safety Systems and the need for Performance Standards and Technical Integrity Verification Schemes over the lifecycle of the plant.

Learning Outcomes

After completing the module the student should be able to:

- 1 Critically review the application of engineered risk control systems in the Nuclear industry
- 2 Analyse a nuclear plant to logically deduce the relevant engineered safeguard systems
- 3 Devise performance standards for nuclear safeguards
- 4 Illustrate how the engineered control systems studied contribute to maintenance of technical integrity over the lifetime of the nuclear plant.

Learning Outcomes of Assessments

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

4000 word essay	2	3	4
Individual and group work	1		

Outline Syllabus

Definition of an Engineered Safeguard System and the need for Performance Standards with an emphasis on practices employed within the Nuclear Industry
Examples of Engineered Safeguard Systems
Defining Performance Standards
Functional requirements
Availability & Reliability
Survivability
Interdependencies
Performance Assurance
Verification of Performance
Technical Integrity assurance throughout an assets lifecycle
Codes and standards
Material selection
Design reviews
Fabrication tests, certification etc.
Construction reviews and inspections
Commissioning tests
Preventative maintenance systems

Learning Activities

A combination of lectures, exercises and supported self study.

Notes

The aim of this module is to provide an understanding of Engineered Safeguard Systems and the need for Performance Standards and Technical Integrity Verification Schemes with a particular emphasis on the Nuclear Industry.

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).