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Title: Engineered Risk Control Systems & Performance (Oil & Gas)  
 Status: Definitive  
 Code: **7530ENGRSK** (118600)  
 Version Start Date: 01-08-2016

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

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: Runs Twice - S1 & S2

Component	Contact Hours
Lecture	10
Online	.5
Tutorial	6

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	Essay	An essay question comprising several component parts, based around a case study, up to 2,000 words long.	50	
Technology	Analysis	Analyse plant to deduce the Safety Critical Elements and devise performance standards, up to 2,000 words.	50	

### Aims

*To provide an understanding of Safety Critical Elements and the need for Performance Standards and Technical Integrity Verification Schemes.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Critically review the application of risk control systems in the Oil and Gas and Process industries
- 2 Analyse a process plant to logically deduce the relevant Safety Critical Elements
- 3 Devise Performance Standards for oil and gas Safety Critical Elements
- 4 Illustrate what assurances are required regarding engineered risk control systems to ensure technical integrity over the lifetime of the asset

## **Learning Outcomes of Assessments**

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

Essay based on case study	1	4
Performance standard	2	3

## **Outline Syllabus**

*Major accident causes*

*Definition of Safety Critical Elements and the need for Performance Standards*

*Examples of Safety Critical Elements*

*Environmental and Business Critical Elements*

*Defining Performance Standards*

*Functional requirements*

*Availability & Reliability (more detail in Availability, Reliability and Maintainability (ARM) Analysis module)*

*Survivability*

*Interdependencies*

*Performance Assurance*

*Verification of Performance*

*Technical Integrity assurance throughout an assets lifecycle*

- *Codes and standards*
- *Design reviews*
- *Fabrication tests, certification etc.*
- *Construction reviews and inspections*
- *Commissioning tests*
- *Preventative maintenance systems*
- *Optimum maintenance scheduling*

## **Learning Activities**

A combination of lectures, exercises during the taught session, and supported self

study.

## **Notes**

The purpose of this module is to provide an understanding of Engineered Risk Control Systems and the need for performance standards and technical integrity verification schemes. This involves looking at definitions for Engineered Risk Control Systems and the need for performance standards. Performance assurance and verification of performance will be discussed as technical integrity assurance throughout an assets lifecycle.

The assessment for this module is a combination of an essay and a technological task.