

Liverpool John Moores University

Title: Process Safety Management in Design and Operations
Status: Definitive
Code: **7567RTC** (120400)
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 introduce the essential elements of a Process Safety Management (PSM) system.

To provide an overview of key focus areas including process safety leadership,

process safety studies, strategies for reducing and managing risk, and monitoring and auditing performance.

Learning Outcomes

After completing the module the student should be able to:

- 1 Analyse the process safety management system
- 2 Justify the importance of process safety leadership
- 3 Identify and review process safety studies
- 4 Analyse the importance of assuring the integrity of engineered barriers, competency of key personnel, and quality of procedures
- 5 Devise leading and lagging process safety indicators, as well as process safety audits

Learning Outcomes of Assessments

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

4000 word essay	1	2	3	4	5
Individual and group work	2	4			

Outline Syllabus

Definition of process safety management (PSM)

Twenty elements of a PSM system:

Process safety leadership

Risk identification and assessment

Risk management

Review and improvement

Process safety standards and guidance

Inherently safer design

Process safety studies:

HAZID, HAZOP and FMEA

Layers of protection analysis (LOPA) and SIL

Physical effects modelling

Reliability, Availability and Maintainability (RAM) modelling

ALARP assessment

Process safety reviews

Barrier diagrams (Bowtie analysis)

Safety critical elements, performance standards, assurance and verification

Process safety leading and lagging indicators

Process safety audits

Management of change

Implementation aspects

Learning Activities

A combination of lectures, exercises and supported self study.

Notes

Controlling risks within major hazard enterprises requires a robust process safety management (PSM) system. This course introduces the essential elements of a PSM system and provides an overview of key focus areas including process safety leadership, process safety studies, strategies for reducing and managing risk, and monitoring and auditing performance.

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).