

## Liverpool John Moores University

Title: SAFETY RELIABILITY AND RISK MANAGEMENT  
Status: Definitive  
Code: **6089ENG** (115904)  
Version Start Date: 01-08-2018

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

Team	Leader
Jun Ren	Y

**Academic Level:** FHEQ6  
**Credit Value:** 10  
**Total Delivered Hours:** 35  
**Total Learning Hours:** 100  
**Private Study:** 65

### Delivery Options

Course typically offered: Runs Twice - S1 & S2

Component	Contact Hours
Lecture	22
Tutorial	11

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	70	2
Essay	AS2	Analysis and Written Report	30	

### Aims

*To equip the student with the means to identify, assess, evaluate and control the risks inherent in organizations. To enable the student to investigate failures and prevent their recurrence by developing proactive management and systems of work.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Identify and assess outcomes and consequences of hazards appropriately.
- 2 Make appropriate decisions based on evaluation and assessment of risk.
- 3 Accurately relate human factors to risk and its acceptability.
- 4 Use statistical techniques appropriately to analyse reliability, maintainability and availability.

### **Learning Outcomes of Assessments**

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

EXAM	1	2	3	4
CW	1	2	3	4

### **Outline Syllabus**

*Health & Safety Management and Loss Control: Definitions of the commonly used terms in risk analysis, e.g. risk, hazard, danger, chance, uncertainty and probability. Examples of their application. Public perception of risk. Hazard identification and risk estimation. Problem of multiple outcomes and consequences.*

*Decision making based on assessment and evaluation of risk: Inclusion of emergency and contingency planning in the decision making process. Use of failure statistics.*

*Techniques of safety management utilizing risk reduction measures and loss control techniques.*

*Human Factors: Application of typical human error assessment models. Attitudes towards risk and its acceptability.*

*Safety Engineering: Performance standards and the measurement of safety outcomes. Measurement of success and failure probabilities. Studies of plant reliability and availability.*

*Hazard operability studies and their application to complex plant.*

*Standard failure prevention techniques - Failure mode and effects analysis, Fault tree analysis and Event tree analysis. Statistical analysis of reliability. Design for safety. The relevant standards.*

### **Learning Activities**

Lectures, tutorials and private study

### **Notes**

The module equips the student to perform legally required assessments of risk and hazard in process and related industry. It outlines the contribution of human factors to inherent risks and applies safety engineering techniques to their reduction.