

Liverpool John Moores University

Title: Reliability Engineering And Risk
Status: Definitive
Code: **7062ENG** (118216)
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: FHEQ7 **Credit Value:** 10 **Total Delivered Hours:** 35
Total Learning Hours: 100 **Private Study:** 65

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	22
Tutorial	11

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam		70	2
Report	Rpt		30	

Aims

To critically analyse current techniques for identification, evaluation and control of the risks facing many organizations. To develop skills in the application of modern risk management techniques. 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 Critically evaluate hazards and recognize their consequences.
- 2 Apply risk assessment techniques to assist in the appropriate decisions making based on evaluation and assessment of identified risk.
- 3 Accurately relate human factors to risk and its acceptability
- 4 Apply professional standards using statistical techniques appropriately to analyse reliability, maintainability and availability.

Learning Outcomes of Assessments

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

examination	1	2	3	4
report	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 investigates the contribution of human factors to inherent risks and applies safety engineering techniques to their reduction.

