

Liverpool John Moores University

Title: RISK AND RELIABILITY
Status: Definitive
Code: **6502ENGSBC** (113910)
Version Start Date: 01-08-2018

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: The Sino-British College

Team	Leader
Jun Ren	Y

Academic Level: FHEQ6
Credit Value: 12
Total Delivered Hours: 37
Total Learning Hours: 120
Private Study: 83

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	20
Online	5
Tutorial	10

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	70	2
Report	AS2	Coursework	30	

Aims

To equip the student with the means to identify, assess, evaluate and control the risks inherent in organisations. 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
Report	1	2	3	

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.

Organisational policies for safety and health: Legal requirements, safety policies as a basis for safety management and loss control. Techniques of safety management utilising 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 reliability in process and related industry. It outlines the contribution of human

factors to inherent risks and applies reliability engineering techniques to their reduction.