Liverpool John Moores University

Title:	Safety and Reliability
Status:	Definitive
Code:	**7016MSC** (121686)
Version Start Date:	01-08-2019
Owning School/Faculty:	Maritime and Mechanical Engineering
Teaching School/Faculty:	Maritime and Mechanical Engineering

Team	Leader
Ben Matellini	Y
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Academic Level:	FHEQ7	**Credit Value:**	10	**Total Delivered Hours:**	19
Total Learning Hours:	100	**Private Study:**	81		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	11
Tutorial	6

Grading Basis: 50 %

Assessment Details

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

Aims

This module covers the application of modern risk management techniques for the identification, evaluation and control of the risk to enable improvements in the safety and reliability of engineering systems.

Learning Outcomes

After completing the module the student should be able to:

1 Critically evaluates 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	4	

Outline Syllabus

Accident analysis 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 criticality analysis, Fault tree analysis and Event tree analysis. Statistical analysis of reliability. Design for safety. The relevant standards.

Learning Activities

Lectures, tutorial and practicals

Notes

The module is designed to allow students to investigate and apply risk analysis and safe engineering techniques within an industrial setting, including the associated human factors