

Summary Information

Module Code	7114MECH
Formal Module Title	Risk and Reliability
Owning School	Engineering
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Tutorial	22

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

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.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Critically evaluates hazards and recognize their consequences.
MLO2	2	Apply risk assessment techniques to assist in the appropriate decisions making based on evaluation and assessment of identified risk.
MLO3	3	Accurately relate human factors to risk and its acceptability
MLO4	4	Apply professional standards using statistical techniques appropriately to analyse reliability, maintainability and availability.

Module Content

Outline Syllabus	<p>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.</p>
Module Overview	
Additional Information	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

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	70	2	MLO1, MLO2, MLO3, MLO4
Report	Coursework assignment	30	0	MLO1, MLO2, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Jin Wang	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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