

Module Title Safety and Reliability Management	Reference ENM615
	SCQF SCQF
Keywords Safety Critical Systems, Risk Management, Reliability Assessment Techniques, Human Factors.	Level 11
	SCQF Points 15
	ECTS Points 7.5
	Created May 2002
	Approved June 2008
	Amended August
	2011
	Version No. 2

This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

CM1901 (Mathematics 1A) or equivalent.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

To provide the student with the ability to understand risk and safety management, utilise techniques for system reliability assessment, and evaluate strategies for safe operation.

Learning Outcomes for Module

Indicative Student Workload

	Full Time	Part Time
<i>Contact Hours</i>		
Assessment	15	15
Lectures/Tutorials	36	36
<i>Directed Study</i>		
None.	15	15
<i>Private Study</i>		
None.	84	84

Mode of Delivery

This is a lecture-based course supplemented with tutorials and student-centred learning.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3,4

Module

Component 2	1,2,3,4
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On completion of this module, students are expected to be able to:

1. Identify the technical and management (systemic) issues which contribute to the safety of a given system.
2. Identify and assess risk, both for a stable system and in a one-off project, and explain how risk can be managed.
3. Identify ways of ensuring that safety conforms to the ALARP principle.
4. Derive the reliability of a system and evaluate design strategies for optimising plant availability.

Indicative Module Content

Causes and outcomes of industrial accidents. Role of design and management. Failure prediction and uncertainty of data. Safety life cycle. Hazard identification and control, Assessment of HAZOP, Fault Tree, event tree and FMECA analysis techniques. ALARP principle. Safety integrity levels, Human factors, Corporate responsibility, safety culture, management (systemic) issues. Assessment techniques for system reliability. Design for reliability. Redundancy and

Component 2 is a closed book examination. (50% weighting)

Component 1 is a coursework which will be a risk and reliability assessment study, assessed by the submission of a report. (50% weighting)

Indicative Bibliography

1. LEITCH, R.D., 1995. Reliability Analysis for Engineers: An Introduction. Oxford: Open University Press.
2. STOREY, N., 1996. Safety-Critical Computer Systems. Harlow: Addison-Wesley.
3. REASON, James, 1990. Human Error. Cambridge University Press.
4. PERROW, Charles, 1999. Normal Accidents. Princeton University Press.
5. BEATY, David, 1995. The Naked Pilot: The Human Factor in Aircraft Accidents. Airline Publishing.

standby systems.