

Unit Outline (Higher Education)

Institute / School:	School of Engineering, Information Technology and Physical Sciences
Unit Title:	Risk Engineering
Unit ID:	MREGC5007
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	039999

Description of the Unit:

This is an advanced unit on risk engineering that covers industrial hazards and their assessment. Topics include risk engineering terminologies, human perception of risk, ALARP & SFAIRP concepts. It also covers risk and reliability mathematics, system modelling and analysis, hazard Identification, cause-consequence diagrams (CCD), HAZard and OPerability study (HAZOP), Failure Modes, Effects and Criticality Analysis (FMECA), Reliability Block diagram (RBD), Fault Trees Analysis (FTA); Event Trees Analysis (ETA). This is an elective unit for students interested in practicing risk engineering and good asset management.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

On successful completion of the course the students are expected to be able to:

Knowledge:

- K1.** Discern and categorise safety and/or financial hazards through standardised, systematic and structured documentation processes.
- K2.** Recognise and infer safety issues and/or financial risks in a pro-active way.
- K3.** Critically review engineering and administrative control measures to manage risk.
- K4.** Define technical systems in terms of Reliability Block Diagrams.

Skills:

- S1.** Identify all reasonably foreseeable safety and/or financial hazards (risks).
- S2.** Analyse causes and consequences of the identified hazards.
- S3.** Estimate risk through assignment of likelihood frequency and consequence severity to each hazard cause.
- S4.** Select and apply the most appropriate risk engineering techniques.
- S5.** Construct models for analysing accidents & consequences through Event Tree Analysis (ETA) and Fault Tree Analysis (FTA) techniques.

Application of knowledge and skills:

- A1.** Apply risk engineering techniques to risk management.
- A2.** Choose engineering control measures to manage risk.
- A3.** Illustrate the management of risk using ALARP/SFAIRP.
- A4.** Predict risk rating and reliability of technical systems through application of risk engineering tools.

Unit Content:

This course covers risk engineering terminologies, human perception of risk, risk concepts and risk analysis.

Topics may include:

- Introduction to risk engineering, human perception of risk and risk terminology.
- Engineering risk management.
- Risk and reliability mathematics.
- Hazard identification techniques and analysis.
- Modelling of accidents & risk assessment.
- Human element in risk assessment.
- Industrial hazard and risk assessment case studies.
- Emergency planning & documentation.

- Recent issues and challenges in risk engineering.
- Risk engineering report writing & presentation to stakeholder.

Learning Task and Assessment:

This 15 CP online course at postgraduate level requires a minimum time commitment of 150 hours of study. Assessments need to be submitted online in assessment submission area allocated for each assessment.

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K4; S1-S5; A1-A4	Analysis of hazard and report on identification & management of risks.	Analysis and report	15% - 40%
K1-K4; S1-S5; A1-A4	Analysis and report using tools for preventing technical failures.	Analysis and report	10% - 30%
K1-K4; S1-S5; A1-A4	Examination or online test	Examination or online test	60% - 40%

Adopted Reference Style:

Other (IEEE)

Refer to the [library website](#) for more information

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