

Course Outline (Higher Education)

School:	School of Engineering, Information Technology and Physical Sciences
Course Title:	RISK ENGINEERING
Course ID:	MREGC5007
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	039999

Description of the Course:

This is an advanced course 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 course for students interested in practicing risk engineering and good asset management.

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

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

Level of course in Program	AQF Level of Program					
	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.

Course 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.

Values:

- V1.** Be confident in taking informed decisions regarding safety risk engineering.

V2. Able to work globally in roles requiring technical risk engineering expertise.

Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the [Higher Education Graduate Attributes Policy](#) (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course	
		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K1-K4; S1-S5; A1-A4	AT1, AT2
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	K1-K4; S1-S5; A1-A4	AT1, AT2
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	K1-K4; S1-S5; A1-A4	AT2
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	K1-K4; S1-S5; A1-A4	AT2
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	K1-K4; S1-S5; A1-A4	AT1, AT2

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	Learning 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

Fed Cite - [referencing tool](#)