

Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: RELIABILITY APPLICATIONS

Unit ID: MREGC5104

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 030799

Description of the Unit:

This unit looks at reliability within an industrial setting focusing on physical and infrastructure assets. It is a project based unit covering the application of several reliability tools and techniques such as the Markov process, failure modes, Effects and Criticality Analysis, reliability data analysis, accelerated testing and fault tolerant systems. This unit may also cover the latest or emerging tools and techniques used in industry.

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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

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

Knowledge:

- K1.** Investigate and solve a wide variety of opportunities for improvements in industrial plants and infrastructure.
- K2.** Identify and define appropriate tools and technologies for the analysis of reliability engineering problems.
- K3.** Review alternative options and recommend reliability engineering solutions for physical assets in a range of industries and infrastructure settings.

Skills:

- S1.** Compare and contrast reliability, availability, maintainability problems to formulate solutions using appropriate tools and techniques for plant, equipment and infrastructure.
- S2.** Synthesize and model options for reducing downtimes, enhancing reliability, availability, maintainability and/or safety.
- S3.** Create strategies to evaluate impacts on costs, risks and performances through applying reliability engineering solutions.

Application of knowledge and skills:

- A1.** Develop solutions and justify best possible option by applying appropriate reliability engineering tools and techniques.
- A2.** Utilisation of reliability tools and techniques to create solutions to succinctly convey findings to reliability engineering end users.

Unit Content:

This unit covers the application of reliability engineering tools and techniques to a work-based topic and the introduction of some new tools and techniques.

Topics may include:

- Introduction to Markov Processes.
- Failure Mode and Effects Analysis (FMEA).
- Reliability Data Analysis.
- Accelerated Testing.
- Fault Tolerant Systems.
- Structuring and writing of an industry problem based research project report.

Learning Task and Assessment:

This 15 CP online unit 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, K2, K3, S1, S2, S3, A1, A2	Analysis and report with project scoping for solving reliability problems.	Analysis and report	10% - 20%
K1, K2, K3, S1, S2, S3, A1, A2	Analysis of tools and techniques in reliability and report on industrial applications.	Analysis and report	20% - 30%
K1, K2, K3, S1, S2, S3, A1, A2	Analysis and report from research on reliability problems and applications of solutions.	Analysis and report	40% -70%

Adopted Reference Style:

Other (IEEE)

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

Fed Cite - [referencing tool](#)