

Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Maintenance and Reliability Engineering Project
Unit ID:	MREGC5008
Credit Points:	15.00
Prerequisite(s):	(At least 45 credit points from course GEM4 or GMR9)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	039999

Description of the Unit:

This advanced unit requires students to complete their capstone project for Master of Maintenance and Reliability Engineering (MRE) and Graduate Diploma of Engineering Maintenance Management. In this unit a student is expected to undertake a complex project involving the solution of an industry-based maintenance and reliability engineering and/ or asset management problem. Students will need to applying relevant knowledge and skills acquired in other maintenance and reliability units. Students will be required to scope their project tailored to an industry setting, undertake research activities, exercise time management, produce a technical report and present their findings based on project outcomes for reducing costs and risks and enhancing asset performance. This is a compulsory unit for Master of Maintenance and Reliability Engineering (MRE) and Graduate Diploma of Engineering Maintenance Management.

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

Work Experience:

No work experience

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	■	■	■	■	■	■
Intermediate	■	■	■	■	■	■
Advanced	■	■	■	■	✓	■

Learning Outcomes:
Knowledge:

- K1.** Identify and describe opportunities for improvement and apply knowledge and skills gained in MRE unit to industry problems.
- K2.** Define methodologies and select tools and techniques for continual improvement in maintenance and reliability engineering projects.
- K3.** Review alternative options and recommend solutions for industry relevant MRE problems.

Skills:

- S1.** Analyse failure, maintenance, safety data and industry reports for project scoping.
- S2.** Plan and conduct research and review findings for continuous improvements in MRE and asset management.
- S3.** Write techno-commercial reports recommending preferred options for solving maintenance and reliability engineering problems in industry setting.

Application of knowledge and skills:

- A1.** Construct problems and formulate creative and innovative solutions for maintenance and reliability engineering problems.
- A2.** Write and present techno-commercial report from lessons learned and opportunities for improvements and justify recommendations for reducing costs and risks and enhancing performance in maintenance and reliability engineering of assets in workplace.

Unit Content:

This unit covers industry problem based research, structuring and drafting of project report, technical paper and communicate to stakeholder.

Project scoping for a practical exercise in maintenance and reliability engineering explaining personal responsibility expected for selecting a realistic industrial problem and carry out investigation.

Tools and techniques in applying knowledge learned in MRE program for defining and analysing potential solutions.

Writing project report and technical paper.

Presentation of research findings to stakeholders.

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-

operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	Students at this level will demonstrate an advanced ability in a range of contexts to effectively communicate, interact and work with others both individually and in groups. Students will be required to display high level skills in-person and/or online in: <ul style="list-style-type: none"> • Using and demonstrating a high level of verbal and non-verbal communication • Demonstrating a mastery of listening for meaning and influencing via active listening • Demonstrating and showing empathy for others • High order skills in negotiating and conflict resolution skills • Demonstrating mastery of working respectfully in cross-cultural and diverse teams. 	Not applicable	Not applicable
FEDTASK 2 Leadership	Students at this level will demonstrate a mastery in professional skills and behaviours in leading others. <ul style="list-style-type: none"> • Creating and sustaining a collegial environment • Demonstrating a high level of self-awareness and the ability to self-reflect and justify decisions • Inspiring and initiating opportunities to lead others • Making informed professional decisions • Demonstrating initiative in new professional situations. 	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: <ul style="list-style-type: none"> • Reflecting critically to generate and consider complex ideas and concepts at an abstract level • Analysing complex and abstract ideas, concepts and information • Communicate alternative perspectives to justify complex ideas • Demonstrate a mastery of challenging conventional thinking to clarify complex concepts • Forming creative solutions in problem solving to new situations for further learning. 	Not applicable	Not applicable
FEDTASK 4 Digital Literacy	Students at this level will demonstrate the ability to work competently across a wide range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: <ul style="list-style-type: none"> • Mastering, exploring, evaluating, managing, curating, organising and sharing digital information professionally • Collating, managing complex data, accessing and using digital data securely • Receiving and responding professionally to messages in a range of professional digital media • Contributing competently and professionally to digital teams and working groups • Participating at a high level in digital learning opportunities. 	Not applicable	Not applicable

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 5 sustainable and Ethical Mindset	Students at this level will demonstrate a mastery of considering and assessing the consequences and impact of ideas and actions in enacting professional ethical and sustainable decisions. Students will be required to display skills in: <ul style="list-style-type: none"> • Demonstrate informed judgment making that considers the impact of devising complex solutions in ambiguous global economic environmental and societal contexts • Professionally committing to the promulgation of social responsibility • Demonstrate the ability to evaluate ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Communicating lifelong, life-wide and life-deep learning to be open to the diverse professional others • Generating, leading and implementing required actions to foster sustainability in their professional and personal life 	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, S1, S2, S3, A1, A2	Report with scope of the maintenance and reliability engineering problem solving project.	Report	10% -30%
K1, K2, K3, S1, S2, S3, A1, A2	Analysis and report with progress of project.	Analysis and report	20% - 50%
K1, K2, K3, S1, S2, S3, A1, A2	Analysis and final report of project findings.	Analysis and report	50% - 80%

Adopted Reference Style:

Other (IEEE)

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

Fed Cite - [referencing tool](#)