



# Unit Outline (Higher Education)

<b>Institute / School:</b>	Institute of Innovation, Science & Sustainability
<b>Unit Title:</b>	ENGINEERING RESEARCH METHODOLOGY AND MANAGEMENT
<b>Unit ID:</b>	ENGIN3001
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	Nil
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	(ENCOR4010 and ENMTX4060)
<b>ASCED:</b>	039999

## Description of the Unit:

A professional engineer requires the ability to critically appraise the work of others and understand the scientific principles that underpin engineering. This unit will introduce students to appropriate methodological tools that will underpin their capstone final year project. In addition, this unit will also develop an appreciation of the business tools that are used to manage a business and how that business maintains a healthy profit margin.

**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:** No

Supplementary assessment is not available to students who gain a fail in this Unit.

## 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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.** Recognize the fundamental principles and methods applicable in the field of engineering research
- K2.** Demonstrate knowledge of standard project management practices
- K3.** Recognize and Interpret the ethics and norms that guide research integrity

#### Skills:

- S1.** Investigate the information needed for the implementation of a research project
- S2.** Appraise the skills necessary to develop a project management plan
- S3.** Assess the work of peers in a constructive manner

#### Application of knowledge and skills:

- A1.** Investigate published material relevant to engineering problems
- A2.** Construct a research plan and identify a rational design of experiments approach

#### Unit Content:

Topics may include:

- Formulating the research question and literature survey
- Research methodology, data collection and processing
- Data analysis with application to Reliability-Availability-Maintainability-Supportability of engineering systems
- Risk analysis and management techniques
- Fundamental economics in project management
- Intellectual property (IP), product safety and liability issues

### Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, S1, A1	Research project selection form and annotated bibliography	Task 1: Research project selection and annotated bibliography	10-20%
K2, K3, S2, S3, A2	Develop understanding of research approaches; identify possible research topics and explore and review list of references; develop/choose suitable methodology; prepare and present research projects and proposed methodology	Task 2: Progress review and tutorial presentations	35-45%
K2, K3, S2, S3, A2	This submission incorporates feedback given by supervisors and it has a deep background on the scientific theory on which the methodology is based	Task 3: Final submission of research proposal document	40-50%

**Alignment to the Minimum Co-Operative Standards (MiCS)**

The Minimum Co-Operative Standards (MiCS) are an integral part of the Co-Operative University Model. Seven criteria inform the MiCS alignment at a Course level. Although Units must undertake MiCS mapping, there is NO expectation that Units will meet all seven criteria. The criteria are as follows:

1. Co-design with industry and students
2. Co-develop with industry and students
3. Co-deliver with industry
4. FedTASK alignment
5. Workplace learning and career preparation
6. Authentic assessment
7. Industry-link/Industry facing experience

MiCS Course level reporting highlights how each Course embraces the principles and practices associated with the Co-Operative Model. Evidence of Course alignment with the MiCS, can be captured in the Course Modification Form.

**MICS Mapping has been undertaken for this Unit** No

Date:

**Adopted Reference Style:**

Other (IEEE: Refer to the library website for more information)

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

Fed Cite - [referencing tool](#)