



# Course Outline (Higher Education)

<b>Institute / School:</b>	Institute of Innovation, Science & Sustainability
<b>Course Title:</b>	ENGINEERING RESEARCH METHODOLOGY AND MANAGEMENT
<b>Course ID:</b>	ENGIN3001
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	(ENCOR1005 or ENGIN1001)
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	(ENCOR4010 and ENMTX4060)
<b>ASCED:</b>	039999

## Description of the Course:

A professional engineer requires the ability to critically appraise the work of others and understand the scientific principles that underpin engineering. This course will introduce students to appropriate methodological tools that will underpin their capstone final year project. In addition, this course 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

## Program Level:

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Introductory						
Intermediate				✓		
Advanced						

## Learning Outcomes:

On successful completion of the course 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

**Course 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

**Values:**

- V1.** Appreciate the role and limitations of research methodology and management in describing engineering industrial performance

**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%

**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](#)