

Course Outline (Higher Education)

School:	School of Science, Engineering and Information Technology
Course Title:	SUSTAINABLE ENGINEERING PRACTICE
Course ID:	ENGIN5208
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	039999

Description of the Course :

This course provides an overview of a wide range of issues relating to sustainable engineering design and practice. It covers content on sustainable engineering materials, life cycle assessment, cultural and heritage assessments, and environmental planning and impact assessment. Contemporary issues related to infrastructure and renewable energy, particularly in the form of solar energy, wind and hydro power, will be explored and related to engineering project management.

Grade Scheme: Graded (HD, D, C, etc.)

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 course but gained a final mark of 45 per cent or above and submitted all major assessment tasks..

Program Level:

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

Learning Outcomes:

Knowledge:

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- K1.** Explain the principles of sustainable engineering as applicable to management of engineering projects.
- K2.** Evaluate the sustainable engineering materials and practices for a range of engineering and infrastructure projects, and recommend alternatives.
- K3.** Reflect how sustainability, environmental and social (including cultural and heritage) constraints impact engineering project development and delivery.

Skills:

- S1.** Critically analyse current engineering practice in an organisation and propose sustainable alternatives.
- S2.** Assess the feasibility of renewal energy sources in current engineering projects.

Application of knowledge and skills:

- A1.** Apply various analytical methods to evaluate engineering projects from a sustainability perspective.
- A2.** Examine how a project relates to the broader social, economic, and environmental context.

Course Content:

Topics will include:

- Principles of sustainable engineering
- Sustainable systems design
- Sustainable engineering materials
- Advanced life cycle and systems assessments
- Renewable and solar fuels
- Wind and hydro power
- Sustainable engineering logistics systems
- Environmental planning and impact assessment

Values:

- V1.** Appreciate the role of sustainable practices play in shaping a society and the effects both short-term and long-term.
- V2.** Recognise the significance of sustainable practices for environment, society and businesses.

Graduate Attributes:

FedUni graduate attributes statement. To have graduates with knowledge, skills and competence that enable them to stand out as critical, creative and enquiring learners who are capable, flexible and work ready, and responsible, ethical and engaged citizens.

Attribute	Brief Description	Focus
Knowledge, skills and competence	Sustainable engineering is a fast-changing area which impacts on our every-day life. Students will develop an appreciation that learning is a life-long process.	High

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Attribute	Brief Description	Focus
Critical, creative and enquiring learners	Development of independent, critical and creative learners is an essential feature of engineering education. Assessments tasks are individualised, so students need to rely on their personal efforts to arrive at their conclusions.	High
Capable, flexible and work ready	Sustainability engineering study requires a team work approach to execute tasks to achieve common objectives. Training for engagements is built in to the program. A student will graduate with a new outlook as an engaging capable, flexible and work ready individual.	High
Responsible, ethical and engaged citizens	Underpinning the content of this course is an emphasis on the importance of sustainability in the development and execution of engineering projects and the consequent need for accuracy and ethical behaviour.	High

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-3, S1-2, A1-2	Research task on sustainable engineering practice in student's field.	Assignment or project report.	20 - 40%
K1-3, S1-2, A1-2	Group based analyses of sustainable engineering practices in a contemporary project and discuss improvements and alternatives.	Report and/or group presentation.	30 - 50%
K1-3, S1-2, A1-2	Problem based questions and design tasks pertinent to large civil infrastructure and renewable energy projects.	Assignment	20 - 40%

Adopted Reference Style:

Other (IEEE)