



Course Outline (Higher Education)

Institute / School:	Institute of Innovation, Science, and Sustainability
Course Title:	PRINCIPLES OF RENEWABLE ENERGY SOURCES
Course ID:	ENGIN2103
Credit Points:	15.00
Prerequisite(s):	(ENGIN1002)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	031301

Description of the Course:

This course provides an introduction to principles of renewable energy. The course covers different types of renewable and alternative energy sources, and discuss their configurations, basic principles of operation, achievable efficiency, and cost. The impact of the new energy technologies on the environment, obstacles to their wide implementation in industrial and consumer applications, and the role of social attitudes and government planning, financial investments and incentives are also introduced.

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

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:

Level of course in Program	AQF Level of Program					
	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 checked="" type="checkbox"/>	<input 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:

Knowledge:

- K1.** Identify different renewable energy systems and describe their suitability based on geographic locations and their environmental impacts.
- K2.** Develop a comprehensive understanding of basic principles of the renewable energy technologies.
- K3.** Recognise and discuss the environmental impact and sustainability of different renewable energy technologies.

Skills:

- S1.** Design and integrate energy storage systems.
- S2.** Construct partial and full renewable energy systems.
- S3.** Perform economic analysis and feasibility studies of different renewable energy technologies.

Application of knowledge and skills:

- A1.** Interpret the principles of the renewable energy and sustainability to generate electrical power.
- A2.** Apply renewable energy techniques to modify and improve existing engineering systems.
- A3.** Analyse characteristics of different renewable energy technologies.

Course Content:

Topics may include:

- Introduction to renewable electrical energy systems, to include their characteristics, design procedures and economic analysis
- Renewable energy sources - solar PV, wind, fuel cell, marine, hydro, etc.
- Design and analysis of practical renewable electrical energy systems as well as on the distributed generation, recent grid codes and economic analysis of renewable energy sources in the context of smart grid

Values:

- V1.** Appreciate the relation between renewable energy and environment.
- V2.** Appreciate learning as a lifelong process and the distinctive scientific principles of renewable energy.

Graduate Attributes

The Federation University Federation graduate attributes (GA) are entrenched in the [Higher Education Graduate Attributes Policy](#) (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor	Development and acquisition of GAs in the course	
	Learning Outcomes (KSA)	Assessment task (AT#)

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		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K1, K2, K3, S1, S2, S3, A1, A2, A3	1, 2, 3
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	K2, S1, S2, S3, A2, A3	1, 2, 3
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	K1, S3	2
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	K1, K3, A1	1, 2
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	K2, K3, S1, S2, A1, A2, A3	1, 2

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1, K2, S2, S3, A2, A3	It aims to consolidate the concepts and principles of renewable energy discussed in the lectures. They will examine students' level of understanding of different renewable energy technologies through constructing partial and full energy systems.	Quizzes/Assignments	20%-30%
K1- K3, S1, A1	For students to prepare technical reports on specified topics to catch up with the state-of-the-art development of renewable energy. This assessment task will promote communication and research skills.	Report	20%-30%
K1-K3, S1, S2, A1, A2	The examination tests analytical and critical thinking and a general understanding of the course materials.	Test or exam	40%-60%

Adopted Reference Style:

Other (IEEE)

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

Fed Cite - [referencing tool](#)