Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: ENERGY CONVERSION

Unit ID: ENGPG9307

Credit Points: 15.00

Prerequisite(s): (ENGPG9302)

Co-requisite(s): Nil

Exclusion(s): (ENGRG9304)

ASCED: 030701

Description of the Unit:
This unit offers an advanced technical insight into the application of thermodynamics principles for conventional and renewable energy conversion. The unit will equip participants with advanced theoretical and practical knowledge and skills in the field of Energy Conversion. After successfully completing the unit, participants will be qualified to undertake skilled engineering work and engage in further learning and research.

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: 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:

On successful completion of the unit the students are expected to be able to:

Knowledge:

K1. Explain the thermodynamic theories and concepts underpinning energy production and utilisation of energy.

K2. Describe the principles and concepts which govern the conventional and renewable methods of generating electricity and heat.

K3. Explain the importance of plant efficiency and its impact on economy and sustainability.

Skills:

S1. Critically analyse, evaluate and transform information in the field of energy conversion and generations.

S2. Generate and transmit solutions to complex problems in the area of power generation using established thermodynamic theories and concepts.

S3. Exercise critical thinking and judgement in developing new understanding in the area of thermodynamic power generation.

S4. Design and conduct a research project in the area of energy conversion and communicate the outcome in writing and to an audience of technical and lay people.

Application of knowledge and skills:

A1. Apply initiative and judgement in professional practice scholarship in relation to the area of energy conversion.

A2. Demonstrate responsibility for own learning and collaborate with others on technical and analytical engineering projects.

A3. Apply research methods to plan and execute project work and research with a level of independence.

Unit Content:

This unit discusses the various methods currently available to produce energy and sorts them out in relation to their performance as well as their impact on the environment and sustainability of resources.

Topics may include:

- Conventional power plants (e.g., thermal, gas, hydro)
- Energy from renewable and sustainable resources (e.g., solar, wind, biomass, tidal)
- Environmental and economical cosiderations

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K3, S1-S3	Numerical assignment	Numerical problems to help students learn problem solving skills.	20-30%
K1-K3,S1-S3	Numerical problems to assess students understanding of advanced topics in energy conversion	Quiz/Tests/Final Exam	30-50%
K2, S4, A1-A3	Group work report on lab experiments, or research based project.	Report (Lab/research project)	20-40%

Adopted Reference Style:

IEEE

Refer to the library website for more information

Fed Cite - referencing tool