Course Outline (Higher Education)

School:	School of Engineering, Information Technology and Physical Sciences
Course Title:	ENERGY CONVERSION
Course ID:	ENGIN4302
Credit Points:	15.00
Prerequisite(s):	(ENGIN3304)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	030701

Description of the Course:

This course offers a deep technical insight into the application of thermodynamics and electrical engineering principles for conventional and renewable energy conversion. The course will equip participants with advanced theoretical and technical knowledge and skills in the area of Energy Conversion. After having, successfully, completed the course, participants will be qualified to undertake highly-skilled engineering work and engage in further learning and research.

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						
Intermediate						
Advanced				✔		

Learning Outcomes:

On successful completion of the course 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.

Course Content:

This course 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 (i.e. thermal, gas, hydro)
- Energy from renewable and sustainable resources (i.e. solar, wind, biomass, tidal)
- Environmental and economical cosiderations

Values:

V1. Recognise the various social and technical parameters which underpin development in the area of power generation.

V2. Appreciate the ethos of sustainability to reduce environmental impact of engineering developments.

V3. Appreciate the significance of research and problem-solving skills for further learning and enquiry.

Graduate Attributes

The Federation University FedUni 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#)
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.	S1-S4	AT1-AT2
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.	A1-A3	AT1-AT2
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.	K3	AT1-AT2
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, S4, A3	AT1-AT2
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.	S4, A3	AT1-AT2

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-K3, S1-S4, A1-A3	Research-based numerical and conceptual tasks.	Report(s) (e.g. Assignment, simulation lab report, experimental report)	40 - 60%
K1-K3, S1-S4, A1-A3	Assessment of all or part of the course.	Test(s) (Online test, Moodle based test(s))	40- 60%

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