



Course Outline (Higher Education)

Institute / School:	Institute of Innovation, Science, and Sustainability
Course Title:	ELECTRICAL POWER DISTRIBUTION ENGINEERING
Course ID:	ENGIN4101
Credit Points:	15.00
Prerequisite(s):	(ENGIN3102)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	031301

Description of the Course:

This course provides knowledge and understanding of electrical power distribution with topics covering - distribution system planning and automation, load characterisation and modelling of distribution networks, application of distribution transformers, design of sub-transmission lines and distribution sub-station, and the distribution system and distributed generation. You will be introduced to the development of an optimal distribution system with respect to construction cost, capitalisation, performance reliability, and operating efficiency.

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 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.** Explain the operations, control, and modelling of electrical power distribution systems.
- K2.** Recognise the various components, operations, and different building blocks in an electrical power distribution network.
- K3.** Explain the complexities and demonstrate the effects of loads on the electrical power distribution systems.

Skills:

- S1.** Evaluate parameters associated with the efficiency, stability and reliability associated with the electrical power distribution systems.
- S2.** Synthesize the optimal electrical power distribution systems.
- S3.** Assess key parameters that influence the design of typical electrical power distribution systems.

Application of knowledge and skills:

- A1.** Interpret different types of faults in electrical power distribution systems.
- A2.** Investigate different challenges associated with electrical power distribution systems.
- A3.** Apply software tools to simulate and study characteristics and behaviour of electrical power distribution systems.

Course Content:

Topics may include:

- Distribution system planning and automation
- Load characteristics and modelling of distribution networks
- Application of distribution transformers
- Design of sub-transmission lines and distribution sub-station
- Voltage drop and power loss calculations
- Distribution system - voltage regulation, protection and reliability
- Distributed generation and renewable energy

Values:

- V1.** Appreciate and apply safe practices in an environment that may contain potential electrical hazards along with the applicable standards and grid codes.
- V2.** Appreciate learning as a lifelong process and the importance of development of optimal electric power distribution system.

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#)
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-K3, S1-S3	1,2
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.	K1-K3, S1-S3, A1-A3	1,2
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-K3, A1-A3	1,2
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.	K3, S1, 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.	K1-K3, S1-S3, A1-A3	1,2

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1,K2, A1	Relevant tasks and problems to enforce understanding of the students and help in the gradual development of knowledge and skills throughout the course.	Assignments / Quizzes	10% - 15%
K3, S1, A3	Experimental work to verify students' ability to apply knowledge and skills acquired in the course.	Distribution System Lab Report/Presentation/Workshop	20% - 25%
S2, S3, A2, A3	Projects to verify students' ability to apply knowledge and skills acquired in the course.	Team Project/Presentation/Report	20% - 25%
K3, A1, S2	Conceptual questions and numerical problems related to the materials covered in the course.	End of Semester Final Test	30% - 35%

Adopted Reference Style:

Other (IEEE)

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

Fed Cite - [referencing tool](#)