Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Electrical Power Distribution Engineering
Unit ID:	ENGRG9204
Credit Points:	15.00
Prerequisite(s):	(ENGRG2205 or ENGRG3201)
Co-requisite(s):	Nil
Exclusion(s):	(ENGIN4101)
ASCED:	031301

Description of the Unit:

This unit 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)

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	☐	☐	☐	☐	☐	☐

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Intermediate				✔		
Advanced						

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.

Unit 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

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1,K2, A1	Quizzes to test the understanding of the students on the subjects and help in the gradual development of knowledge and skills throughout the unit.	Quizzes	10% - 30%
K3, S1, A3	Experimental work to verify students' ability to apply knowledge and skills acquired in the unit.	Distribution System Lab Report and Presentation	20% - 25%

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S2, S3, A2, A3	Projects to verify students' ability to apply knowledge and skills acquired in the unit.	Team Project and presentation of the project outcomes	20% - 25%
K3, A1, S2	Conceptual questions and numerical problems related to the materials covered in the unit.	End of Semester Final Test	30% - 50%

Adopted Reference Style:

IEEE

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

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