

ELEC 3009 POWER SYSTEMS

Credit Points 10

Legacy Code 300771

Coordinator Mahmood Nagrial ([https://directory.westernsydney.edu.au/search/name/Mahmood Nagrial/](https://directory.westernsydney.edu.au/search/name/Mahmood%20Nagrial/))

Description This subject provides students with a global picture of electrical energy systems. Through practical exercises students will examine and analyse the basic processes of generation, transmission and distribution, power system analysis and planning as well as power systems operation under steady-state and transient conditions. Various aspects of power system operation including harmonics, fundamentals of protection, environmental issues and renewable energy systems are also covered in this subject.

School Eng, Design & Built Env

Discipline Electrical Engineering

Student Contribution Band HECS Band 2 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 3 subject

Pre-requisite(s) ELEC 2010 or ELEC 3011

Assumed Knowledge

Basic knowledge of power frequency devices and systems.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Summarize and critique the operation of the power supply system grid under normal and transient conditions.
2. Complete basic power systems analysis.
3. Identify and utilize the notions and implications of power system fault levels and stability.
4. Explain Harmonics and their causes, power factor including harmonics.
5. Explain some of the environmental issues associated with energy conversion systems.
6. Identify and critique alternative energy sources.

Subject Content

Overview of generation, transmission and distribution in power systems

Determination of transmission line parameters

Power systems behaviour in steady state and transient conditions

Power system stability

Economic dispatch and unit commitment

Renewable energy sources and their impact on power systems

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task
Practical	2 hours (per practical)	25	N	Individual
Intra-session Exam	1 hour	25	N	Individual
Final Exam	2 hours	50	N	Individual

Teaching Periods

Sydney City Campus - Term 2 (2023)

Sydney City

On-site

Subject Contact Eileen An ([https://directory.westernsydney.edu.au/search/name/Eileen An/](https://directory.westernsydney.edu.au/search/name/Eileen%20An/))

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3009_23-SC2_SC_1#subjects)

Spring (2023)

Penrith (Kingswood)

On-site

Subject Contact Mahmood Nagrial ([https://directory.westernsydney.edu.au/search/name/Mahmood Nagrial/](https://directory.westernsydney.edu.au/search/name/Mahmood%20Nagrial/))

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3009_23-SPR_KW_1#subjects)

Parramatta City - Macquarie St

On-site

Subject Contact Mahmood Nagrial ([https://directory.westernsydney.edu.au/search/name/Mahmood Nagrial/](https://directory.westernsydney.edu.au/search/name/Mahmood%20Nagrial/))

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3009_23-SPR_PC_1#subjects)

Sydney City Campus - Term 1 (2024)

Sydney City

On-site

Subject Contact Mahmood Nagrial ([https://directory.westernsydney.edu.au/search/name/Mahmood Nagrial/](https://directory.westernsydney.edu.au/search/name/Mahmood%20Nagrial/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC3009_24-SC1_SC_1#subjects)

Spring (2024)

Penrith (Kingswood)

On-site

Subject Contact Mahmood Nagrial ([https://directory.westernsydney.edu.au/search/name/Mahmood Nagrial/](https://directory.westernsydney.edu.au/search/name/Mahmood%20Nagrial/))

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Parramatta City - Macquarie St

On-site

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Sydney City Campus - Term 3 (2024)

Sydney City

On-site

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC3009_24-SC3_SC_1#subjects)