

# ELEC 7010 POWER SYSTEM PLANNING AND ECONOMICS

**Credit Points** 10

**Legacy Code** 300197

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

**Description** This unit covers planning techniques for energy and electrical power systems. It also covers the economics of various options and reliability of electrical power systems.

**School** Eng, Design & Built Env

**Discipline** Electrical And Electronic Engineering And Technology

**Student Contribution Band** HECS Band 2 10cp

**Level** Postgraduate Coursework Level 7 subject

## Restrictions

Students must be enrolled in a postgraduate program

## Learning Outcomes

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

1. Explain and analyse power systems under normal and transient conditions.
2. Analyse power systems using various techniques.
3. Explain optimal control and economic operation of power systems.
4. Identify and utilise the notions and implications of power system fault levels and stability on transmission planning.
5. Explain and analyse harmonics, their causes and effects on system operation & control.
6. Explain and formulate environmental issues associated with energy conversion systems.
7. Identify and critique alternative and renewable energy sources.

## Subject Content

Advanced power system components.

Advanced power system control and operation.

Review of econometric generation allocation methods and their limitations.

Transmission planning and distribution planning.

The National Electricity Market - structure, network service and retail services providers.

Alternative energy sources.

1. The National Electricity Market - structure, network service and retail services providers, energy 'wheeling' and trading, the energy 'pool' and typical price behaviours.
2. Review of conventional planning techniques and their limitations.
3. Demand forecasting.
4. System reliability.
5. Transmission planning.
6. Distribution planning and demand management.

## 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.

Item	Length	Percent	Threshold	Individual/Group Task
Practicals	4 practicals with 2 hours duration for each practical	25	Y	Group
Mid-semester test/exam	One hour	25	N	Individual
Final Exam	2 hours	50	N	Individual

Teaching Periods

## Spring

### Parramatta City - Macquarie St

#### Day

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View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC7010\\_22-SPR\\_PC\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC7010_22-SPR_PC_D#subjects))