

# ELEC 2005 ELECTRONICS (WSTC ASSOCD)

Credit Points 10

Legacy Code 700242

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

**Description** This subject further develops skills in the analysis, design, practical implementation and testing of the main analogue electronic circuits. Topics covered are: semiconductor diodes and their applications, Bipolar Junction Transistors (BJT), Field Effect Transistors (FET), analysis of BJT and FET, design of discrete operational amplifiers and operational amplifier characteristics and circuit configurations. Offerings of alternate subjects are dependent on there being sufficient student enrolment numbers. If enrolments are low, the College may cancel delivery of the alternate subject.

**School** Eng, Design & Built Env

**Discipline** Electrical And Electronic Engineering And Technology

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

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 2 subject

**Pre-requisite(s)** ELEC 1004

**Equivalent Subjects** ELEC 2004 - Electronics

**Restrictions** Students must be enrolled in 7022 Associate Degree in Engineering

## Assumed Knowledge

Vibrations and wave phenomena; photoelectric effect, atomic structure and periodic table, electricity and magnetism.

## Learning Outcomes

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

1. Explain the basic structure and mode of operation of pn junction diode.
2. Conduct an AC and DC analysis of a circuit with pn junction diode.
3. Explain the basic structure and mode of operations of BJT, MOSFET transistors and operational amplifiers.
4. Conduct an AC and DC analysis of single-stage amplifying circuits using BJT, MOSFET transistors and operational amplifiers.
5. Design simple electronic circuits for a given specification and application.
6. Use Electronics Workbench as a tool to simulate and understand electronic circuits.

## Subject Content

1. Semiconductors Diodes
2. Diode applications
3. Bipolar Junction Transistor (BJTs)
4. DC Biasing (BJTs)
5. Field Effect Transistors (FETs)
6. DC biasing of FET
7. AC Analysis of FET Operational Amplifiers

## 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	Mandatory
Practical	12 hours	15	N	Individual	N
Quiz	30 minutes each	10	N	Individual	N
Intra-session Exam	1 hour +30 min	25	N	Individual	N
End-of-session Exam	Part 1: 2 hours + 30 min Part 2: 20 minutes per student	50	Y	Individual	Y

## Teaching Periods

### Quarter 4 (2025)

#### Nirimba Education Precinct

##### Hybrid

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View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ELEC2005\\_25-Q4\\_BL\\_3#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC2005_25-Q4_BL_3#subjects))

#### Penrith (Kingswood)

##### Hybrid

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