# ELEC 3002 DATA COMMUNICATIONS

**Credit Points** 10

**Legacy Code** 300997

**Coordinator** Ranjith Liyanapathirana (https://directory.westernsydney.edu.au/search/name/Ranjith Liyanapathirana/)

**Description** This subject is concerned with the principles and topics of fundamental importance to digital data communication, computer communication networks and telecommunications. The lower layers of the protocol structure (physical layer, data link layer and some aspects of the network layer) and the physical medium (hardware and transmission lines) are emphasized. An engineering approach will be taken to provide an insight to transmission and transmission media, communication techniques and transmission efficiency.

**School** Eng, Design & Built Env

**Discipline** Electrical And Electronic Engineering And Technology

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

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

**Level** Undergraduate Level 3 subject

**Pre-requisite(s)** ELEC 2011

**Incompatible Subjects** ELEC 4001 - Data Networks

## Learning Outcomes

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

1. Outline common data transmission concepts and techniques.
2. Identify the concepts and physical mechanisms underlying data communication in telecommunication networks.
3. Analyse the telephone network to identify the concepts and physical mechanisms underlying data communication.
4. Evaluate the differences between circuit switching and packet switching, and explain how a data communication system can detect and correct channel errors in transmission.

## Subject Content

1. Data transmission
2. Guided (including optical fibre) and unguided (wireless) transmission
3. Signal encoding
4. Interfacing
5. Data link control
6. Multiplexing (Synchronous, Asynchronous, Statistical)
7. Spread Spectrum Modulation (Frequency Hopping, Direct Sequence)
8. Error control and flow control techniques
9. Circuit switching and packet switching

## 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 | 5 x 3 hours (group) Written report max 10 pages (individual) | 20 | Y | Both (Individual & Group) |
| Intra-session Exam | 1.5 hours | 20 | N | Individual |
| Final Exam | 2 hours | 60 | Y | Individual |

Prescribed Texts

- Stallings, W 2013 Data and Computer Communications, 10th edn, Boston: Pearson 2013

Teaching Periods

## Spring (2022)
### Penrith (Kingswood)
**Day**
**Subject Contact** Ranjith Liyanapathirana (https://directory.westernsydney.edu.au/search/name/Ranjith Liyanapathirana/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC3002_22-SPR_KW_D#subjects)

## Spring (2023)
### Penrith (Kingswood)
**On-site**
**Subject Contact** Ranjith Liyanapathirana (https://directory.westernsydney.edu.au/search/name/Ranjith Liyanapathirana/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3002_23-SPR_KW_1#subjects)