

School / Faculty: Faculty of Science and Technology

Course Title: NETWORK ARCHITECTURE AND DESIGN

Course ID: ITECH2301

Credit Points: 15.00

Prerequisite(s): (ITECH1102)

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED Code: 020103

Grading Scheme: Graded (HD, D, C, etc.)

Program Level:

AQF Level of Program						
	5	6	7	8	9	10
Level						
Introductory	■	■	■	■	■	■
Intermediate	■	■	✓	■	■	■
Advanced	■	■	■	■	■	■

Learning Outcomes:

Knowledge:

- K1.** Discuss the network architecture for open systems interconnection.
- K2.** Describe the operation of the TCP/IP architecture.
- K3.** Explain the technologies and protocols of physical, data link, network and transport layers.
- K4.** Describe the technologies and architecture of LANs, Wireless LANs and WANs.
- K5.** Identify the principles of LAN design.

Skills:

- S1.** Analyse data communication and networking technologies in today's Internet.
- S2.** Analyse the Quality of Service (QoS) requirements of applications and identify protocols supporting them.

Application of knowledge and skills:

- A1.** Analyse and design LAN architecture for organisational requirements.
- A2.** Apply the knowledge acquired in this course to improve networking performance of an organisation.

Course Outline (Higher Education)

ITECH2301 NETWORK ARCHITECTURE AND DESIGN

Course Content:

Topics may include:

- Introduction to the Open System Interconnection (OSI) reference model and TCP/IP protocol architecture;
- Data link control protocols - flow and error control mechanism, error detection and correction;
- Local Area Network overview - topologies, components and Ethernet architecture;
- Wireless LAN operation and standards;
- LAN design issues and practical considerations;
- Network layer protocols - IP operation and internetworking;
- Transport layer protocols - process to process delivery, UDP and TCP;
- QoS requirements for applications - resource reservation protocols and differentiated services in IP.

Values and Graduate Attributes:

Values:

- V1.** Appreciate the responsibilities of a network administrator to design, maintain and expand enterprise networks, and act in accordance with best practice and industry standards.

Graduate Attributes:

FedUni graduate attributes statement. To have graduates with knowledge, skills and competence that enable them to stand out as critical, creative and enquiring learners who are capable, flexible and work ready, and responsible, ethical and engaged citizens.

Attribute	Brief Description	Focus
Knowledge, skills and competence	Students will expand their knowledge and skills in networking technologies and industry standards.	Medium
Critical, creative and enquiring learners	Students will develop critical thinking skills in the development of their theoretical and technical expertise in the field of networking.	High
Capable, flexible and work ready	Students will gain capability and flexibility in the use of technologies that integrate people and devices. Students will also gain awareness of industry standards that have been developed by professionals working in the field of networking.	Medium

Course Outline (Higher Education)

ITECH2301 NETWORK ARCHITECTURE AND DESIGN

Attribute	Brief Description	Focus
Responsible, ethical and engaged citizens	Students will familiarise themselves with a variety of networking standards and their ethical foundations used in industry.	Medium

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Task	Assessment Type	Weighting
K3, K4, K5, S1, A1, A2	Assessment tasks will test students' knowledge and ability to answer conceptual questions on networking technologies, protocols, and the design of Local Area Networks (LAN) for small business organizations.	Assignments / Laboratory Tasks / Quizzes	30-50%
K1, K2, K3, K4, S2, A2	Assessment tasks will test students' understanding and knowledge of the fundamental of networking, industry standards and best practice.	Examination / Tests	50-70%

Adopted Reference Style:

APA