School of Software and Electrical Engineering

SWINBURNE UNIVERSITY OF TECHNOLOGY

Unit Outline

TNE10006

Networks and Switching

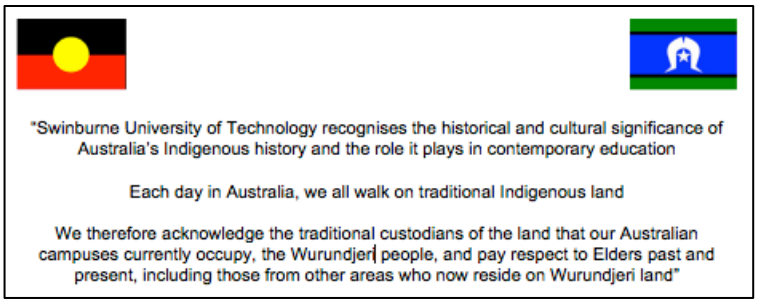
Semester 2 2021

Please read this Unit Outline carefully. It includes:

PART A Unit summary

PART B Your Unit in more detail

PART C Further information



PART A: Unit Summary

Unit Code(s)		TNE10006
Unit Title		Networks and Switching
Duration		One Semester or equivalent
Total Contact Hours		60 hours
Requisites:		
	Pre-requisites	
	Co-requisites	
	Concurrent pre-requisites	
	Anti-requisites	TNE10003 LAN Principles TNE20001 IP Technologies
	Assumed knowledge	
Credit Points		12.5
Campus/Location		Hawthorn
Mode of Delivery		Online Synchronous / Online Asynchronous / On-campus
Assessment Summary		In-Semester Assessment – 30% Final Skills Assessment – 20% Final Concepts Assessments – 50%

Aims

This unit of study aims to introduce you to the field of data networking and to provide you with the necessary skills to design and successfully deploy a small network.

Unit Learning Outcomes

Students who successfully complete this Unit should be able to:

1. Use the OSI Model to discuss network design and infrastructure (K3, S3)
2. Design an addressing scheme to subnet a network to given specifications (K2, K3, S3)
3. Describe the processes of LAN switching and how VLANs are used in a switched network (K3)
4. Use best practice to design secure corporate networks and deploy security to practical networking environments (K3, S1, S3)
5. Describe how the Spanning Tree Protocol eliminates loops in multi-switched LANs (K3)
6. Construct a simple network of PCs, switches and a router, and troubleshoot problems in those networks (K3, S1, S2, S3)
7. Generate documentation for laboratory work and assignments (A2)

Swinburne Engineering Competencies for this Unit of Study

This Unit of Study will contribute to you attaining the following Swinburne Engineering Competencies:

K2 **Maths and IT as Tools:** Proficiently uses relevant mathematics and computer and information science concepts as tools

K3 **Discipline Specific:** Proficiently applies advanced technical knowledge of the specific discipline within that context

S1 **Engineering Methods:** Applies engineering methods in practical applications

S2 **Problem Solving:** Systematically uses engineering methods in solving complex problems

S3 **Design:** Systematically uses engineering methods in design

A2 **Communication:** Demonstrates effective communication to professional and wider audiences

Graduate Attributes

This unit may contribute to the development of the following Swinburne Graduate Attributes:

- Communication skills
- Teamwork skills
- Digital literacies

Content

- Networking Fundamentals
- OSI Network Layers
- Ethernet fundamentals, technologies and switching
- TCP/IP and addressing
- Subnets and subnetting (VLSM and CIDR)
- Switching concepts
- Virtual LANs
- Inter-VLAN Static routing
- Network and Secure Network Design
- EtherChannel Bundling
- Spanning Tree Protocol
- Wireless LANs
- Basic switch troubleshooting History of Unix

PART B: Your Unit in more detail

Unit Improvements

Feedback provided by previous students through the Student Survey has resulted in improvements that have been made to this unit. Recent improvements include:

- Modified group assessments that better support skills learning
- Attendance arrangements that will allow students to run on-campus lab sessions
- Updated Lab practices that better adapt to online learning
- Extended synchronous Q&A sessions to complement pre-recorded lectures

Unit Teaching Staff

Name	Role	Room	Email	Consultation Times
Karina Cereceda	Unit Convenor Lecturer	EN607a	necerecedacastellani@swin.edu.au	By appointment
Staff list on Canvas	Lab Instructors		Contact via Canvas	

Learning and Teaching Structure

Activity	Total Hours	Hours per Week	Teaching Period Weeks
Lectures	24 hours	4 hours	Weeks 1 to 12
Laboratory Work	36 hours	6 hours	Weeks 1 to 12

Week by Week Schedule

Week	Lecture Topic	Laboratory / On-campus Assessments	Online Tests Schedule (complete in your own time)
1	Unit Overview Network Layer Modules	Lab Journal Housekeeping Router and Switch Remote Access Lab SU-1a	
2	Link Layer and Ethernet	Introduction to NetAcademy Introduction to Packet Tracer Lab SU-2a	
3	Switching Concepts and VLANs Trunking	CCNA1 Chapter 1 Exam Lab SU-3a	
4	Network Layer – IPv4	Subnetting Exercises Lab SU-4a	
5	IPv4 Subnetting – VLSM	Subnetting Exercises Lab SU-5a Lab SU-5b **Group Lab Activity 1**	
6	IPv4 Subnetting – VLSM	Lab SU-6a Sample Mid-Semester Skills Assessment Demonstration **Group Lab Activity 2**	
7	Inter-VLAN Routing LAN Design	Sample Mid-Semester Skills Assessment Sample Mid-Semester Skills Assessment Demonstration	VLSM Test 1
8	Spanning Tree Protocol	**Mid-Semester Skills Assessment**	CCNA1 Modules 1-3 CCNA1 Modules 4-7 CCNA1 Modules 8-10 CCNA2 Modules 1-4
9	EtherChannel Bundling Wireless Concepts	STP Discussion Lab SU-7a Lab SU-8a	
10	Wireless Concepts IPv6	Lab SU-9a Lab SU-9b	VLSM Test 2
11	IPv6 Transport Layer – TCP and UDP	**Group Lab Activity 3**	
12	Transport Layer – TCP and UDP	Sample Final Skills Assessment Demonstration **Final VLSM Assessment**	CCNA1 Modules 11-13 CCNA1 Modules 14-15 CCNA1 Modules 16-17 CCNA2 Modules 5-6 CCNA1 Final Exam

Assessments

a) Assessment Overview

Tasks and Details	Individual or Group	Weight	Related Unit Learning Outcomes	Assessment Due Date
1. CCNA NetAcademy	Individual	5%	1, 2	Refer to weekly schedule
2. Mid-Semester Skills Assessment	Individual	5%	2, 3, 6, 7	
3. VLSM Test 1	Individual	2.5%	2	
4. VLSM Test 2	Individual	2.5%	2	
5. Group Lab Activities	Group	15%	1, 2, 3, 4, 5, 6, 7	
7. Final VLSM Assessment	Individual	10%	2	In Lab Session. Week 12
8. Final Skills Assessment	Individual	20%	2, 3, 6, 7	Final Assessment Period
9. Final Oral Defence	Individual	40%	1, 2, 3, 4, 5	Final Assessment Period

b) Minimum requirements to pass this Unit

As the minimum requirements of assessment to pass a unit and meet all Unit Learning Outcomes to a minimum standard, a student must achieve:

(i) An aggregate mark of 50% or more, and
(ii) obtain at least 40% in the Final Concept Assessments, and
(ii) must pass the Final Skills Assessment.

Students who do not meet (i), (ii) and (iii), will score a maximum of 45% as the total mark for the Unit.

CISCO Academy (CNAP) CCNA program

- Attempting the specified CCNA Modules within the CNAP Program is mandatory
- Enrolment will be done by your instructor during Week 1
- The CCNA CNAP Program runs separately from the Swinburne Unit
- In order to achieve a pass within the CNAP Program you must:
    - Pass the Swinburne Unit
    - Achieve a score of at least 60% in the CCNA1 Final Test

c) Examinations

If the unit you are enrolled in has an official examination, you will be expected to be available for the entire examination period including any Special Exam period.

The use of dictionaries and calculators is not permitted during assessments.

The use of mobile phones, tablets and personal computers is not permitted during on-campus assessments. During online assessments, the use of mobile phones, tablets or personal computers is permitted only for accessing the online tools required to complete the assessment. The use of these devices for any other purposes is not permitted.

You are expected to have access to the Unit's online learning tools (i.e. Canvas and Collaborate Ultra) for online assessments. You should also be prepared to share screen, audio and video with the assessor team if required; this means that your device should be equipped with a microphone and a webcam.

d) Submission Requirements

The Group Lab Activities must be submitted through Canvas. Only one group member need submit the assignment for the group, your submitted report will be passed through the Turnitin online submission system.

Please ensure you keep a copy of all assessments that are submitted.

e) Extensions and Late Submission

Late Submissions - Unless an extension has been approved, late submissions will result in a penalty. You will be penalised 10% of your achieved mark for each working day the task is late, up to a maximum of 5 working days. After 5 working days a zero result will be recorded.

f) Special Consideration

If you were unable to attend an on-campus or online assessment due to serious and unavoidable circumstances outside of your control, you may be able to apply for special consideration (SPC). Please refer to Part C of this document for more information.

Students who completed the assessment on the original date will not be granted SPC. Therefore, if you are unfit to complete an assessment, you are advised to not attempt it and apply for SPC.

g) Referencing

To avoid plagiarism, you are required to provide a reference whenever you include information from other sources in your work. Further details regarding plagiarism are available in Section C of this document.

Referencing conventions required for this unit are the IEEE Citation Policy, more information at: http://www.ieee.org/documents/ieeecitationref.pdf

Helpful information on referencing can be found at http://www.swinburne.edu.au/library/referencing/

h) Groupwork Guidelines

A group assignment is the collective responsibility of the entire group, and if one member is temporarily unable to contribute, the group should be able to reallocate responsibilities to keep to schedule. In the event of longer-term illness or other serious problems involving a member of group, it is the responsibility of the other members to immediately notify the Unit Convenor or relevant tutor.

All group members must be satisfied that the work has been correctly submitted. Any penalties for late submission will generally apply to all group members, not just the person who submitted.

Recommended Reading Materials

The official textbook is available for purchase as an eBook. Details are available on Canvas.

The library has a large collection of resource materials, both texts and current journals. Relevant references that will provide valuable supplementary information to this unit are listed on Canvas. It is also recommended that you explore other sources to broaden your understanding.

PART C: FURTHER INFORMATION

For further information on any of the below topics, refer to Swinburne's Current Students web page http://www.swinburne.edu.au/student/.

Student behaviour and wellbeing

All students are expected to: act with integrity, honesty and fairness: be inclusive, ethical and respectful of others; and appropriately use University resources, information, equipment and facilities. All students are expected to contribute to creating a work and study environment that is safe and free from bullying, violence, discrimination, sexual harassment, vilification and other forms of unacceptable behaviour.

The Student Charter describes what students can reasonably expect from Swinburne in order to enjoy a quality learning experience. The Charter also sets out what is expected of students with regards to your studies and the way you conduct yourself towards other people and property.

You are expected to familiarise yourself with University regulations and policies and are obliged to abide by these, including the Student Academic Misconduct Regulations, Student General Misconduct Regulations and the People, Culture and Integrity Policy. Any student found to be in breach of these may be subject to disciplinary processes.

Examples of expected behaviours are:

- conducting yourself in teaching areas in a manner that is professional and not disruptive to others
- following specific safety procedures in Swinburne laboratories, such as wearing appropriate footwear and safety equipment, not acting in a manner which is dangerous or disruptive (e.g. playing computer games), and not bringing in food or drink
- following emergency and evacuation procedures and following instructions given by staff/wardens in an emergency response

Canvas

You should regularly access the Swinburne learning management system, Canvas, which is available via the Current Students webpage or https://swinburne.instructure.com/ Canvas is updated regularly with important unit information and communications.

Communication

All communication will be via your Swinburne email address. If you access your email through a provider other than Swinburne, then it is your responsibility to ensure that your Swinburne email is redirected to your private email address.

Academic Integrity

Academic integrity is about taking responsibility for your learning and submitting work that is honestly your own. It means acknowledging the ideas, contributions and work of others; referencing your sources; contributing fairly to group work; and completing tasks, tests and exams without cheating.

Swinburne University uses the Turnitin system, which helps to identify inadequate citations, poor paraphrasing and unoriginal work in assignments that are submitted via Canvas. Your Unit Convenor will provide further details.

Plagiarising, cheating and seeking an unfair advantage with regards to an exam or assessment are all breaches of academic integrity and treated as academic misconduct.

Plagiarism is submitting or presenting someone else's work as though it is your own without full and appropriate acknowledgement of their ideas and work. Examples include:

- using the whole or part of computer program written by another person as your own
- using the whole or part of somebody else's written work in an essay or other assessable work, including material from a book, journal, newspaper article, a website or database, a set of lecture notes, current or past student's work, or any other person's work
- poorly paraphrasing somebody else's work
- using a musical composition or audio, visual, graphic and photographic work created by another
- using realia created by another person, such as objects, artefacts, costumes, models
- submitting assessments that have been developed by another person or service (paid or unpaid), often referred to as contract cheating
- presenting or submitting assignments or other work in conjunction with another person or group of people when that work should be your own independent work, This is regardless of whether or not it is with the knowledge or consent of the other person(s). Swinburne encourages students to talk to staff, fellow students and other people who may be able to contribute to a student's academic work but where an independent assignment is required, the work must be the student's own
- enabling others to plagiarise or cheat, including letting another student copy your work or by giving access to a draft or completed assignment

The penalties for academic misconduct can be severe, ranging from a zero grade for an assessment task through to expulsion from the unit and, in the extreme, exclusion from Swinburne.

Student support

You should talk to your Unit Convenor or Student Services for information on academic support services available for Swinburne students.

Special consideration

If your studies have been adversely affected due to serious and unavoidable circumstances outside of your control (e.g. severe illness or unavoidable obligation), you may be able to apply for special consideration (SPC).

Applications for Special Consideration will be submitted via the SPC online tool no later than 5.00pm on the third working day after the submission/sitting date for the relevant assessment component.

Accessibility needs

Sometimes students with a disability, a mental health or medical condition or significant carer responsibilities require reasonable adjustments to enable full access to and participation in education. Your needs can be addressed by Swinburne's AccessAbility Services by negotiating and distributing an 'Education Access Plan'. The plan makes recommendations to university teaching and examination staff. You must notify AccessAbility Services of your disability or condition within one week after the commencement of your unit to allow the University to make reasonable adjustments.

Review of marks

An independent marker reviews all fail grades for major assessment tasks. In addition, a review of assessment is undertaken if your final result is between 45 and 49 or within 2 marks of any grade threshold.

If you are not satisfied with the result of an assessment, you can ask the Unit Convenor to review the result. Your request must be made in writing within 10 working days of receiving the result. The Unit Convenor will review your result to determine if your result is appropriate.

If you are dissatisfied with the outcomes of the review, you can lodge a formal complaint.

Feedback, complaints and suggestions

In the first instance, you may discuss any issues with your Unit Convenor. If you are dissatisfied with the outcome of the discussions with the Unit Convenor or would prefer not to deal with your Unit Convenor, then you can complete a feedback form.

Advocacy

Should you require assistance with any academic issues, University statutes, regulations, policies and procedures, you are advised to seek advice from an Independent Advocacy Officer at Swinburne Student Life (previously Swinburne Student Amenities Association (SSAA).

For an appointment, please call 03 9214 5445 or email advocacy@swin.edu.au

For more information, please see https://www.swinburne.edu.au/current-students/student-services-support/advocacy/