



COMP6250

Data Communication

Session 2, Special circumstance, North Ryde 2020

Department of Computing

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Notice

As part of [Phase 3 of our return to campus plan](#), most units will now run tutorials, seminars and other small group learning activities on campus for the second half-year, while keeping an online version available for those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face and online activities for your unit, please go to [timetable viewer](#). To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

General Information

Unit convenor and teaching staff

Damian Jurd

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Credit points

10

Prerequisites

Corequisites

Co-badged status

Unit description

This unit introduces basic data communication concepts, theory and practice within the context of the use of communication networks in organisations. Topics include: protocols and standards, including the OSI model; in-depth understanding of key protocols of the TCP/IP protocol suite; network switching and routing, including both intra-domain and inter-domain routing protocols; multicast protocols; LAN and WAN topologies; wireless networking; network hardware, such as routers, modems, repeaters, switches and hubs; public telecommunication-based data services; the effect of telecommunications on society; the role of telecommunications within organisations; introduction to security and network management; organisational management of telecommunications; introduction to network design; and regulatory frameworks. Practical work includes basic network hardware set up and protocol performance in a specialised laboratory using dedicated switching and routing equipment. This unit does not presume any knowledge of programming nor is there any programming work in the unit.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Enunciate the importance and the role of network protocols including why they are organised into protocol stacks and how protocol stacks function.

ULO2: Demonstrate an understanding of network addressing, routing of traffic between networks and the mechanisms that allow applications to co-exist and interact.

ULO3: Differentiate among LAN components, describe addressing schemes at various layers and how they interact, techniques to resolve them, and in particular instances calculate addresses.

ULO4: Critically reflect on different major network technologies including wireless, backbone, wide area networks, and the Internet and, being aware of their properties, be able to evaluate different network designs.

ULO5: Demonstrate technical networking proficiency including demonstrated ability to configure, construct, and document, and in simple cases, design networks, as well as the ability to perform traffic analysis on local area networks.

ULO6: Demonstrate an understanding of, and have an ability to develop plans for dealing with, issues regarding network security and management.

General Assessment Information

LATE PENALTY

No extensions will be granted without an approved application for [Special Consideration](#). There will be a deduction of 20% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late. For example, 25 hours late in submission for an assignment worth 40 marks – 40% penalty – deducted from the total for an assignment marked out of 100. No submission will be accepted after solutions have been posted.

ASSIGNMENTS

Assignment work must be written clearly, with good grammar, correct word usage, correct punctuation, and lack of spelling errors. Poor or bad expression will be penalized. Wherever required, all written work must be properly referenced and conform to standard stylistic conventions.

PRACTICALS

Note that while the practical material is structured against the lecture material, you need to keep in mind that there will not always be a one to one mapping between the practical exercises and the lecture topics. This is because you need some practical sessions to get acquainted to new tools and devices thereby limiting the number of practical time slots available to experiment with technologies discussed in some lectures.

EXAMINATIONS

The unit has four module examinations which assess the material studied in weeks 1-2, 3-7, 8-9, and 10-13 respectively. Each examination is offered twice: once during the workshop classes in weeks 3, 8, 10 and 13, respectively, and once in the final examination period. The repeat offerings of the examination will not be identical examinations but will be designed to assess the same material. All examinations delivered electronically via e-Learn in the networking laboratory

on level 2 of building 9WW.

If a student attempts an examination more than once then the higher of their marks for the two attempts will be used to compute the grade.

If you receive [Special Consideration](#) for the final exam, a supplementary exam will be scheduled after the normal exam period, following the release of marks. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

Assessment Tasks

Name	Weighting	Hurdle	Due
Practical Workshops	10%	Yes	Every week
Assignment 1	15%	No	Week 6
Assignment 2	15%	No	Week 12
Modular Hurdle Assessments	60%	No	Weeks 3, 8, 10, 13, Exam Period

Practical Workshops

Assessment Type ¹: Demonstration

Indicative Time on Task ²: 13 hours

Due: **Every week**

Weighting: **10%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

The practical work in this unit makes up 10% of your mark. The practical work is divided up into twelve sections. Practical classes are a hurdle requirement, and, as such, you will be required to perform to a satisfactory standard in at least eight of the practical classes to pass the unit. Each practical contributes 1% of your total mark for the unit, the total mark will be made by taking the total of the best 10 practical session marks. To receive your marks you must attend the practical section and demonstrate your completion of the section to your practical supervisor. Earning the marks will require not only the successful completion of the exercises but the presentation of appropriate documentation, as outlined in the question sheets. You must complete the practical session in the week it is allocated. Practical classes will commence during week 2 of the semester.

On successful completion you will be able to:

- Enunciate the importance and the role of network protocols including why they are organised into protocol stacks and how protocol stacks function.
- Demonstrate an understanding of network addressing, routing of traffic between networks and the mechanisms that allow applications to co-exist and interact.
- Differentiate among LAN components, describe addressing schemes at various layers and how they interact, techniques to resolve them, and in particular instances calculate addresses.
- Demonstrate technical networking proficiency including demonstrated ability to configure, construct, and document, and in simple cases, design networks, as well as the ability to perform traffic analysis on local area networks.
- Demonstrate an understanding of, and have an ability to develop plans for dealing with, issues regarding network security and management.

Assignment 1

Assessment Type ¹: Report

Indicative Time on Task ²: 14 hours

Due: **Week 6**

Weighting: **15%**

The first assignment tests students understanding of network stacks, layering, and addressing techniques.

On successful completion you will be able to:

- Enunciate the importance and the role of network protocols including why they are organised into protocol stacks and how protocol stacks function.
- Demonstrate an understanding of network addressing, routing of traffic between networks and the mechanisms that allow applications to co-exist and interact.
- Differentiate among LAN components, describe addressing schemes at various layers and how they interact, techniques to resolve them, and in particular instances calculate addresses.

Assignment 2

Assessment Type ¹: Report

Indicative Time on Task ²: 14 hours

Due: **Week 12**

Weighting: **15%**

The second assignment tests students understanding of selected networking technologies.

On successful completion you will be able to:

- Critically reflect on different major network technologies including wireless, backbone, wide area networks, and the Internet and, being aware of their properties, be able to evaluate different network designs.
- Demonstrate technical networking proficiency including demonstrated ability to configure, construct, and document, and in simple cases, design networks, as well as the ability to perform traffic analysis on local area networks.
- Demonstrate an understanding of, and have an ability to develop plans for dealing with, issues regarding network security and management.

Modular Hurdle Assessments

Assessment Type **1**: Examination

Indicative Time on Task **2**: 18 hours

Due: **Weeks 3, 8, 10, 13, Exam Period**

Weighting: **60%**

The modular hurdle assessments ask students to answer conceptual questions about the course material as well as solve simple networking problems. Assessments are run in the first hour of the scheduled lecture class. In the case a student cannot attend a module exam, a request for special consideration must be made. Four module examinations are each offered up to two times during semester. The student's best mark for each module is used in their final mark. Modules 1 and 3 are each worth 10% of the final grade. Modules 2 and 4 are each worth 20% of the final grade.

On successful completion you will be able to:

- Enunciate the importance and the role of network protocols including why they are organised into protocol stacks and how protocol stacks function.
- Demonstrate an understanding of network addressing, routing of traffic between networks and the mechanisms that allow applications to co-exist and interact.
- Differentiate among LAN components, describe addressing schemes at various layers

and how they interact, techniques to resolve them, and in particular instances calculate addresses.

- Critically reflect on different major network technologies including wireless, backbone, wide area networks, and the Internet and, being aware of their properties, be able to evaluate different network designs.
- Demonstrate technical networking proficiency including demonstrated ability to configure, construct, and document, and in simple cases, design networks, as well as the ability to perform traffic analysis on local area networks.
- Demonstrate an understanding of, and have an ability to develop plans for dealing with, issues regarding network security and management.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Classes

Each week you should attend three hours of lectures, and a two hour practical workshop. For details of days, times and rooms consult the [timetables webpage](#).

Note that practicals workshops (lab sessions) commence in **week 2**. The week-by-week details of the practical (lab) classes will be available from iLearn.

You must attend the practicals that you are enrolled in.

Textbook and Reading Materials

The textbook for this semester is:

- Comer, D. Computer Networks And Internets Sixth Edition, 2015. ISBN [978-0-133-58793-7](#).

Additional reading that you may find useful for this unit:

- Comer, D. Internetworking With TCP/IP Volume 1: Principles Protocols, and Architecture, 6th edition, 2014. ISBN [978-0-136-08530-0](#).

BE CAREFUL to buy correct Comer book!

- Tanenbaum, A. & Wetherall, D. Computer Networks, 5th Edition, Pearson, ISBN [978-0-13-3-07262-4](#)

Web Resources

Unit Websites

COMP6250 is administered via [iLearn \(http://ilearn.mq.edu.au/\)](http://ilearn.mq.edu.au/).

This unit outline can be found in the university's [unit guides](#)

Lecture recordings

Lectures will be conducted via Zoom. Digital recordings of lectures *may* be available. When available they will be linked from iLearn.

Technologies Used and Required

In this unit you will be exposed to the following technology and tools:

- HP networking equipment and the Comware network operating system.
- Wireshark Packet Analyzer software.

General Notes

In this unit, you should do the following:

- Attend lectures, take notes, ask questions.
- Attend your weekly Practical session.
- Ensure that you attend module exams during the first hour of your practical session.
- Read appropriate sections of the text, add to your notes and prepare questions for your lecturer/tutor.
- Work on any assignments that have been released.

Lecture notes will be made available each week but these notes are intended as an outline of the lecture only and are not a substitute for your own notes or the recommended reading list.

Unit Schedule

Tentative teaching schedule, subject to change:

Week	Module	Lecture Topic	Module Exam	Weight	Reading	Practical
1	Networking Fundamentals (NF)	Introduction			Ch 1, 2, 5	No Labs
2		LANs			Ch 13, 14, 15	Wireshark Intro

3	Layers and Stacks (LS)	Network Layer: IP	NF (30 min)	10%	Ch 20, 21	Comware Intro
4		Application Layer, Transport Layer - UDP			Ch 25	IP Headers
5		Transport Layer - TCP			Ch 26	Subnetting
6		Link Layer			Ch 14, 15	Layers 4 and 5
7		Physical Layer			Ch 6, 7, 8, 9	Switches, MAC, ARP
8	Network Security (NS)	Network Security I	LS (60 min)	20%	Ch 30	DNS
9		Network Security II			Ch 30	SSL
10	Internetworking and Network Architecture (IA)	IP Routing	NS (30 min)	10%	Ch 18, 22	Static Routing
11		Backbone Networks			Ch 17	VLAN
12		MAN and WAN			Ch 18	Dynamic Routing RIP
13		Wireless and Review	IA (60 min)	20%	Ch 16	Dynamic Routing OSPF
14-16	Formal Exam Period		NF, LS, NS, IA (180 min)			

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4*

December 2017 and replaces the Disruption to Studies Policy.)

Students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.