



COMP6250

Data Communication

Session 1, Weekday attendance, North Ryde 2020

Department of Computing

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General Information

Unit convenor and teaching staff

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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.

Assessment Tasks

Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult [iLearn](#) for revised unit information.

[Find out more about the Coronavirus \(COVID-19\) and potential impacts on staff and students](#)

General Assessment Information

General Assessment Information

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.

Late Submissions

No extensions will be granted without an approved application for Special Consideration. There will be a deduction of 10% 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 10 marks – 20% penalty or 2 marks deducted from the total. No submission will be accepted after solutions have been posted.

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.

Delivery and Resources

Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

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 1**. 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 [978-0-133-07262-4](#)

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

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

Coronavirus (COVID-19) Update

The unit schedule/topics and any references to on-campus delivery below may no longer be relevant due to COVID-19. Please consult [iLearn](#) for latest details, and check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Tentative teaching schedule, subject to change:

Week	Module	Lecture Topic	Module Exam	Weight	Assignments	Reading	Practical
1	Networking Fundamentals (NF)	Introduction				Ch 1, 2, 5	Wireshark Intro
2		LANs				Ch 13, 14, 15	Network OS and Command Line
3	Layers and Stacks (LS)	Network Layer	NF (30 min)	10%		Ch 20, 21	IP Headers

4		Application Layer, Transport Layer - UDP				Ch 25	Subnetting
5		Transport Layer - TCP				Ch 26	Transport and Application Layers
6		Link Layer			Assignment 1	Ch 14, 15	Switches, MAC, ARP
7		Physical Layer				Ch 6, 7, 8, 9	Good Friday
Mid Semester Break							
8	Network Security (NS)	Network Security I	LS (60 min)	20%		Ch 30	TBD
9		Network Security II				Ch 30	TBD
10	Internetworking and Network Architecture (IA)	IP Routing	NS (30 min)	10%		Ch 18, 22	Static Routing
11		Backbone Networks				Ch 17	Dynamic Routing RIP
12		MAN and WAN			Assignment 2	Ch 18	Dynamic Routing OSPF
13		Wireless and Review	IA (60 min)	20%		Ch 16	TBD
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.

Grading

At the end of the semester, you will receive a grade that reflects your achievement in the unit

- **Fail (F)**: does not provide evidence of attainment of all learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; and incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the discipline.
- **Pass (P)**: provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; and communication of information and ideas adequately in terms of the conventions of the discipline. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes.
- **Credit (Cr)**: provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; plus communication of ideas fluently and clearly in terms of the conventions of the discipline.
- **Distinction (D)**: provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the discipline and the audience.
- **High Distinction (HD)**: provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or

problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application.

In this unit, the final mark will be calculated by combining the marks for all assessment tasks according to the percentage weightings shown in the assessment summary.