COMP3250

Computer Networks

Session 2, In person-scheduled-weekday, North Ryde 2024

School of Computing

Contents

General Information

Unit convenor and teaching staff
Unit Convenor & Lecturer
Rajan Shankaran
rajan.shankaran@mq.edu.au
Room 285, 4RPD

Unit Convenor & Lecturer
Yan Li
y.li@mq.edu.au
Room 353, 4RPD

Credit points
10

Prerequisites
130cp at 1000 level or above including ((COMP1010 or COMP125) and (COMP2250 or COMP247)) and ((DMTH137 or MATH1007 or MATH2907 or DMTH237 or ELEC2040 or ELEC240))

Corequisites

Co-badged status

Unit description
This unit gives an understanding of advanced topics in the design and implementation of computer networks. It provides an in-depth understanding of key protocols of the TCP/IP protocol suite, and its relationship to emerging technologies. This unit allows students to develop knowledge and expertise in key areas such as intra- and inter-domain routing protocols, multicast protocols, different transport protocols, Quality of Service, and multimedia. These concepts are reinforced through lecture and practical sessions. Knowledge gained during the unit builds upon communication protocols; topological designs; wide area and local area networks; wireless/mobile networks; as well as practical hands-on skills on Cisco equipment. It allows students to expand their skill set by exposure to socket programming paradigm enabling them to better understand the design and implementation of protocols. Some of the reasoning tasks that the students complete require focused thinking instead of iteratively modifying and testing a program. It also enhances students' skills in critical thinking and problem solving using challenging assignments.

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: Demonstrate an understanding of advanced knowledge in networking (especially in Internet technologies) and be able to communicate this knowledge to wider audience

ULO2: Design TCP/IP based networks and protocols and to integrate such networks with other networking technologies

ULO3: Have a working knowledge of practical advanced networking and write professional documentation

ULO4: Demonstrate an understanding of security issues in computer networking.

ULO5: Engage in independent professional work with a high level of autonomy and accountability.

General Assessment Information

General Notes

In this unit, you should do the following:

• Attend lectures, take notes, ask questions.

• Attend your tutorial/practical, seek feedback from your lecturer on your work.

• Prepare for and strive to do well in the quizzes

• Read appropriate sections of the text, add to your notes and prepare questions for your lecturer/tutor.

• Prepare answers to tutorial questions.

• Work on any assignments that have been released.

Please note it is to your benefit to attend most of the classes, prepared to participate in discussions, ask and answer questions, and provide perspectives from your own background and workplaces. Resources to assist your learning Digital recordings of lectures are available as Echo360 through iLearn login. These are provided for review material and in case of missing lectures. Recordings should not be relied upon and copyrighted material may be omitted. iLearn is used for out-of-class communication as well as forums where active discussion of issues is encouraged. iLearn can be found at can be found at http://learn.mq.edu.au. You are encouraged to review iLearn weekly and to do background reading before each class.

Special Consideration

The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events

that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

Written Assessments: If you experience circumstances or events that affect your ability to complete the written assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

Note that for workshops, a Special Consideration should only be applied for if you miss three or more than three of the weekly practical classes.

Requirements to Pass this unit

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. There are no hurdles in this unit.

Concretely, in order to pass the unit, you must obtain an overall total mark of **50%** or higher. Students obtaining a higher grade than a pass in this unit will (in addition to the above)

• have a total mark of 85% or higher to obtain High Distinction;

◦ have a total mark of 75% or higher to obtain Distinction;

◦ have a total mark of 65% or higher to obtain Credit.

You are encouraged to:

• set your personal deadline earlier than the actual one;

• keep backups of all important assessed tasks;.

• make sure no one else picks up your printouts. All work submitted should be readable and well presented.

You should never commit plagiarism in any of your submitted work, including tutorial and practical answers.

Assignment Submission Guidelines and Late Submission

Your assignment is to be submitted online using Turnitin.

Online quizzes, in-class activities, or scheduled tests and exam must be undertaken at the time indicated in the unit guide. Should these activities be missed due to illness or misadventure, students may apply for Special Consideration.

All other assessments must be submitted by 5:00 pm on their due date.

Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration.

Late Assessment Submission Penalty

From 1 July 2022, Students enrolled in Session based units with written assessments will have the following late penalty applied. Please see https://students.mq.edu.au/study/asse

ssment-exams/assessments for more information.

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is 11:55 pm. A 1-hour grace period will be provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for Special Consideration.For example, if the assignment is worth 8 marks (of the entire unit) and your submission is late by 19 hours (or 23 hours 59 minutes 59 seconds), 0.4 marks (5% of 8 marks) will be deducted. If your submission is late by 24 hours (or 47 hours 59 minutes 59 seconds), 0.8 marks (10% of 8 marks) will be deducted, and so on.

In this unit, late submissions will be accepted for the following assessment tasks::

- Quiz 1: NO, unless Special Consideration is granted
- Quiz 2: NO, unless Special Consideration is granted
- Assignment 1: YES, Standard Late Penalty applies
- Assignment 2: YES, Standard Late Penalty applies
- Final Exam: NO, unless Special Consideration is granted.
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Methods of Communication

Our primary means of communication will be through your university email and announcements on iLearn. It is crucial to consistently check your university's email for important updates and information related to the course. The teaching staff will not entertain emails that do not originate from university email IDs.

Additionally, significant announcements will be posted on iLearn, a centralized platform for accessing vital details about the course. Should you have any queries or require assistance from the teaching staff, including the unit convenor, you have two communication channels. Firstly, you can post your queries on the iLearn discussion board, providing an interactive space for instructors and peers to engage in discussions. Alternatively, you may send emails to the corresponding addresses of the teaching staff using your university email address for official communication. Through these communication methods, we aim to ensure effective and timely dissemination of information and provide the necessary support throughout the course.

Assessment Tasks

Name	Weighting	Hurdle	Due
Practicals	10%	No	Weeks 2 - 11, Catchup: weeks 12, 13

Name	Weighting	Hurdle	Due
Quizzes: On Campus	20%	No	Week 5 & Week 11 in workshops
Assignment 1	15%	No	11:55 pm on Friday ending Week 8
Assignment 2	15%	No	11:55 pm on Friday ending Week 12
Final Examination	40%	No	Exam Period

Practicals

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 10 hours
Due: **Weeks 2 - 11, Catchup: weeks 12, 13**
Weighting: **10%**

Practical marks are obtained by attendance of practical sessions and making a suitable attempt at the practical work during the session. 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 successful completion of the exercises, but presentation of appropriate documentation, as outlined in the question sheets. You should complete the practical session in the week it is allocated. (and the practical material is structured against the lecture material with this in mind).

Note: We **advise** you to complete **all sections** to gain a good understanding of the covered topics.

On successful completion you will be able to:

- Have a working knowledge of practical advanced networking and write professional documentation
- Demonstrate an understanding of security issues in computer networking.

Quizzes: On Campus

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 20 hours
Due: **Week 5 & Week 11 in workshops**
Weighting: **20%**

There will be two quizzes in the following weeks: **5** and **11**. Each quiz is worth **10** marks. A quiz is a short test that will be based on your previously attempted discussion questions and previous

lecture material. The quizzes will be held online in your practical class. The quiz questions will be handed over to you at the beginning of your Practical class and will be 1 hour in duration. .

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Assignment 1

Assessment Type [1]: Problem set
Indicative Time on Task [2]: 15 hours
Due: **11:55 pm on Friday ending Week 8**
Weighting: **15%**

Assignment Type: Problem Solving:

The purpose of the problem solving assignment is to help the students to get accustomed to dealing with real world problem situations/issues.It is designed to help students analyse a particular problem and find its best solution. Some questions may require an in depth research and will be a process to come up with an acceptable and reasonable answer

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Assignment 2

Assessment Type [1]: Problem set
Indicative Time on Task [2]: 15 hours
Due: **11:55 pm on Friday ending Week 12**
Weighting: **15%**

Individual Assignment

Assignment Type: Problem Solving-Research: This type of assignment is designed to help students build up their critical thinking skills while looking for solutions to real world networking related problems.

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Final Examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 40 hours
Due: **Exam Period**
Weighting: **40%**

Final exam.

An examination allows us to individually and securely assess student's mastery of the coursework material. The examination will be closed book.

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[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

Week 1 classes

Lectures commence from Week 1. Workshop sessions commence in Week 2. All classes (lectures and workshops) are on campus.

Each week, students will have:

- One 2-hour Lecture, and
- One 2-hour workshop.

Lectures

Lectures commence from **week 1 to week 13.**

On campus lecture sessions will provide an opportunity for the students to ask questions on the topic of the week and to clarify anything that they might not be sure of. Lecture recordings will be made available through Echo360.

Workshops (Practicals)

Practical sessions commence from **week 2** to **week 11,** and includes problem solving and practical hands on sessions. Practical classes give you an opportunity to practice your practical networking skills under the supervision of a demonstrator. Each week you will be given a number of problems to work on; it is important that you keep up with these problems as doing so will help you understand the material in the unit and prepare you for the work in assignments. **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.

There will be one 2 hour long practical session each week starting **week 2** and each practical exercise is worth **2 marks**. The practical sessions are conducted in a specially-equipped networking laboratory. There is no opportunity to conduct practical work outside the assigned sessions.

Weeks 12 and 13 are catchup weeks and provide an opportunity to do practical exercise/s that were missed over the course of the semester (weeks 2-11).

Quizzes

The Quiz is an in-class test. It is a formative assessment that can be used to measure students' knowledge and comprehension of unit materials. Quiz Question types may include multiple choice, and true/false type of questions. Quizzes allow for formative assessment feedback on basic conceptual competence and therefore usually span multiple learning outcomes.There will be two quizzes in the following weeks: **5** and **11**.

The quiz will be based on your previously covered lecture material. For example, week 5 quiz will be based on lectures done in weeks 1 to 4. Each quiz contributes 10% of the total mark and serves as a feedback mechanism to monitor your progress in the unit. These quizzes will be auto marked in ilearn. The results will be released on ilearn in a timely manner.

Assignments

Thesse are Problem solving type assessment tasks. The purpose of the problem-solving assignment is to help the students get accustomed to dealing with real world problem situations/ issues. It is designed to help students analyse a particular problem and find its best solution.There is no group component to this assignment. This is an individual assignment. Answers will be marked based on technical correctness, completeness, clarity, and relevance..The assignment is submitted through Turnitin and students can see Turnitin similarity reports. Results will be released on iLearn in a timely manner, subject to certain acceptable delays such as accommodating special consideration late assessments.

The Recommended Text

- Internetworking with TCP/IP Volume 1, 6th edition Douglas Comer
- Computer Networks (5th Edition) by Andrew S. Tanenbaum and David J. Wetherall
- Computer Networks and Internets: Global (6th) Edition by Douglas Comer
- Computer Networking: A Top-Down Approach 7th edition by James F. Kurose and Keith

W. Ross (older editions - 5th and 6th editions can be used as well)

- Request For Comments (RFCs): Series of memoranda encompassing new research, innovations, and methodologies applicable to Internet technologies.
- RFC documents are available to public for free. We will be posting these documents on ilearn as well.

Methods of Communication

We will communicate with you via your university email and through announcements on iLearn. Queries to convenors can either be placed on the iLearn discussion board or sent to the unit convenor via the contact email on iLearn.

COVID Information

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: https://www.mq.edu.au/about/coronavirus-faqs. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

Unit Schedule

Tentative Lecture Schedule

Note: We participate that there may be some shifting of material depending on class progress during the semester.

1	Introduction to TCP/IP, IP addressing	Papers
2	Introduction to Routing	Papers
3	Intra domain Routing	Papers
4	Classless Inter-Domin Routing (CIDR)	Papers
5	Inter Domain Routing - BGP	Papers, Quiz 1
6	IP Multicast	Papers
7	Transport Layer-Transmission Control Protocol (TCP)	Papers
8	Network Security	Papers, Assignment 1 due
Break		Papers
9	Internet Protocol (IP) version 6	Papers
10	Label Switching	Papers
11	Mobile Internet Protocol (Mobile IP)	Papers, Quiz 2
12	Software Defined Networks (SDN)	Papers, Assignment 2 due
13	Review	Papers

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). 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
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

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

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/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

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the

expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

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

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the 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

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

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.

Changes from Previous Offering

We value student feedback to be able to continually improve the way we offer our units. As such we encourage students to provide constructive feedback via student surveys, to the teaching staff directly, or via the FSE Student Experience & Feedback link in the iLearn page.

Student feedback from the previous offering of this unit was very positive overall, with students pleased with the clarity around assessment requirements and the level of support from teaching staff. As such, no change to the delivery of the unit is planned, however we will continue to strive to improve the level of support and the level of student engagement.

Unit information based on version 2024.03 of the Handbook