



COMP8290

Multimedia Networks and Real Time Protocols

Session 1, In person-scheduled-weekday, North Ryde 2022

School of Computing

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General Information

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Credit points

10

Prerequisites

COMP6010 and COMP6250

Corequisites

Co-badged status

Unit description

This course focuses on recent advances in multimedia networking technologies and protocols. The multimedia transportation requires the network to support timely and errorless transmission much more strictly than other data. This had led to the development of state of the art technologies, protocols and mechanisms to support multimedia traffic over the network. Major topics include multimedia compression and standards, quality of service (QoS) support mechanisms and protocols, performance analysis, queuing principles, IP multicasting, Internet multimedia applications, and multimedia transport over wireless networks.

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: Analyse and design various types of network architectures, protocols, and

mechanisms to support multimedia.

ULO2: Characterise and classify different classes of network traffic in order to assess its impact on the network.

ULO3: Describe and design end systems support for multimedia transport.

ULO4: Use simulation tools to analyse and evaluate the performance of multimedia networked systems.

ULO5: Describe, analyse and critically evaluate different IP multicasting techniques.

ULO6: Engage in independent professional work with a high level of autonomy and accountability.

General Assessment Information

Late submissions **will be accepted but will incur a penalty** unless there is an approved Special Consideration request. A 12-hour grace period will be given after which the following deductions will be applied to the awarded assessment mark: 12 to 24 hours late = 10% deduction; for each day thereafter, an additional 10% per day or part thereof will be applied until five days beyond the due date. After this time, a mark of zero (0) will be given. For example, an assessment worth 20% is due 5 pm on 1 January. Student A submits the assessment at 1 pm, 3 January. The assessment received a mark of 15/20. A 20% deduction is then applied to the mark of 15, resulting in the loss of three (3) marks. Student A is then awarded a final mark of 12/20.

Assessment Tasks

Name	Weighting	Hurdle	Due
Quiz 2	10%	No	Week 10
Quiz 1	10%	No	Week 5
Assignment 2	30%	No	Week 11
Final Examination	40%	No	Exam period
Assignment 1	10%	No	Week 7

Quiz 2

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 5 hours

Due: **Week 10**

Weighting: **10%**

A quiz is a short test that will be based on your previously covered lecture material. For example, week 5 quiz will be based on lectures done in weeks 1-4. The quiz serves as a feedback

mechanism to monitor your progress in the unit.

On successful completion you will be able to:

- Describe and design end systems support for multimedia transport.
- Describe, analyse and critically evaluate different IP multicasting techniques.

Quiz 1

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 5 hours

Due: **Week 5**

Weighting: **10%**

A quiz is a short test that will be based on your previously covered lecture material. For example, week 5 quiz will be based on lectures done in weeks 1-4. The quiz questions will be handed over to you at the beginning of your Lecture class. Each quiz contributes 10% of the total mark and serves as a feedback mechanism to monitor your progress in the unit.

On successful completion you will be able to:

- Analyse and design various types of network architectures, protocols, and mechanisms to support multimedia.
- Characterise and classify different classes of network traffic in order to assess its impact on the network.
- Describe and design end systems support for multimedia transport.

Assignment 2

Assessment Type ¹: Project

Indicative Time on Task ²: 20 hours

Due: **Week 11**

Weighting: **30%**

Report Writing and Presentation: Students will leverage their knowledge of multimedia systems and real time protocols to research and critically analyse relevant literature in the discipline and present conclusions. The assessment also allows students to further develop their team working and professional communication skills.

On successful completion you will be able to:

- Describe and design end systems support for multimedia transport.
- Describe, analyse and critically evaluate different IP multicasting techniques.
- Engage in independent professional work with a high level of autonomy and accountability.

Final Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 30 hours

Due: **Exam period**

Weighting: **40%**

Final examination

On successful completion you will be able to:

- Analyse and design various types of network architectures, protocols, and mechanisms to support multimedia.
- Characterise and classify different classes of network traffic in order to assess its impact on the network.
- Describe and design end systems support for multimedia transport.
- Use simulation tools to analyse and evaluate the performance of multimedia networked systems.
- Describe, analyse and critically evaluate different IP multicasting techniques.
- Engage in independent professional work with a high level of autonomy and accountability.

Assignment 1

Assessment Type ¹: Problem set

Indicative Time on Task ²: 15 hours

Due: **Week 7**

Weighting: **10%**

The purpose of this 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

On successful completion you will be able to:

- Analyse and design various types of network architectures, protocols, and mechanisms to support multimedia.
- Characterise and classify different classes of network traffic in order to assess its impact on the network.
- Describe and design end systems support for multimedia transport.
- Use simulation tools to analyse and evaluate the performance of multimedia networked systems.

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

OMP8290 is taught via lectures and informal tutorial/practical sessions.

Lectures

Lectures are used to introduce switch/router design and cloud architectures and protocols and put them in a wider context. You are encouraged to ask questions of the lecturer, both during and outside the lecture, to clarify anything you might not be sure of. 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.

It should be noted that no single text book completely covers the content of this unit. A large portion of the lecture material is drawn from research papers, white papers and standard documents. Students are encouraged to read the weekly recommended reading list to gain a solid understanding of the topics that are covered.

Quizzes

There will be two quizzes in the following weeks: **5** and **10**. These quizzes will be held in the practical class. A quiz is a short test that will be based on your previously covered lecture material. For example, week 5 quiz will be based on lectures done in weeks 1-4. The quiz questions will be handed over to you at the beginning of your Lecture class. These quizzes contribute 20% of the total mark and serve as a feedback mechanism to monitor your progress in the unit.

Assignments

Your assignment is to be submitted online using Turnitin. There will be a deduction of **5%** of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late. This penalty does not apply for cases in which an application for special consideration is made and approved. If you cannot submit assignments on time because of illness or other circumstances, please contact the convener at the earliest possible time.

Tutorial

Problem solving session: Tutorials are posted every Friday on ilearn. Even though these tutorial exercises are not formally assessed, it is important that students solve them on a weekly basis as these questions are often previous exam questions or structured like test/exam questions. The more practice you have at such questions, the more likely you are to do yourself justice in quizzes/exams. Solutions to these exercises will be regularly posted on ilearn unit site. If need be, this will also allow you to discuss the problems effectively with your lecturer/peers and maximise the feedback you get on your work. In case of any difficulty, seek help from the teaching staff.

Practical

The purpose of practical sessions is to reinforce the concepts that were taught in the lectures.

Note: Practical classes are not held every week. Please refer to the ilearn unit web page for updates.

TEXT

There is no single text book containing material that could address all topics of unit. All necessary reading material and elaborate and detailed notes on lecture topics will be provided by the lecturer every week.

Other Useful Books (You need not buy unless you believe you need to own one)

- Jenq-Neng Hwang Multimedia Networking: From Theory to Practice Cambridge University Press 978-0-521-88204-0
- RTP - Audio and Video for the Internet Addison-Wesley, 2003 ISBN-10: 0672322498 ISBN-13: 978 0672322495 First Edition

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](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 \(https://students.mq.edu.au/support/study/policies\)](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 \(https://policies.mq.edu.au\)](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 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.