COMP8280

Mobile Data Networks

Session 2, Special circumstances, North Ryde 2021

School of Computing

Contents

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Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of units with mandatory on-campus classes/teaching activities.

Visit the MQ COVID-19 information page for more detail.

General Information

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Credit points
10

Prerequisites
ITEC647 or COMP6250

Corequisites

Co-badged status

Unit description
This unit will aim to provide a sound understanding of the architecture and operating principles
of mobile and wireless networks. The unit will cover two fronts: introduce students to the
diverse literature on mobile data networks, and expose them to the fundamental issues in
design and analysis of different mobile network architectures. A healthy mix of technological
and research issues will be covered pertaining to a wide range of topics in mobile networking
including wireless LANs, mobile network layer design, location management and mobility
tracking, mobile transport layer design issues, and ad hoc 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: Demonstrate in-depth knowledge and understanding of mobile technologies and apply them to solve practical real world problems in a professionally responsible manner.

ULO2: Demonstrate an understanding of the fundamental principles required to design mobile networks.

ULO3: Analyse the protocol architecture of mobile data and cellular networks.

ULO4: Exemplify a wide range of problems and research issues in the field of mobile networking.

ULO5: Demonstrate an understanding of the concepts, techniques, algorithms, and protocols employed in mobile data and cellular networks and be able to communicate these ideas to wider audience

ULO6: Evaluate critically a wide range of current trends and technologies in the field of mobile networking

ULO7: Engage in independent professional work with a high level of autonomy and accountability.

General Assessment Information

Assignment Submission

Your assignment is to be submitted online using Turnitin.

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.

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.

Assessment Tasks

Name	Weighting	Hurdle	Due
Assignment 1	20%	No	Week 7
Quiz 2	20%	No	Week 10
Quiz 1	20%	No	Week 5

Name	Weighting	Hurdle	Due
Assignment 2	40%	No	Report: Week 11, Presentation: Week 12/13

Assignment 1

Assessment Type [1]: Problem set
Indicative Time on Task [2]: 30 hours
Due: **Week 7**
Weighting: **20%**

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

On successful completion you will be able to:
- Demonstrate in-depth knowledge and understanding of mobile technologies and apply them to solve practical real world problems in a professionally responsible manner.
- Demonstrate an understanding of the fundamental principles required to design mobile networks.
- Analyse the protocol architecture of mobile data and cellular networks.
- Exemplify a wide range of problems and research issues in the field of mobile networking.
- Demonstrate an understanding of the concepts, techniques, algorithms, and protocols employed in mobile data and cellular networks and be able to communicate these ideas to wider audience
- Evaluate critically a wide range of current trends and technologies in the field of mobile networking
- Engage in independent professional work with a high level of autonomy and accountability.

Quiz 2

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 15 hours
Due: **Week 10**
Weighting: **20%**

Quiz 2 is a short test (close book) that will be based on your previously covered lecture material for weeks 5-9. The quiz questions will be handed over to you at the beginning of your Lecture class.

On successful completion you will be able to:

- Demonstrate in-depth knowledge and understanding of mobile technologies and apply them to solve practical real world problems in a professionally responsible manner.
- Demonstrate an understanding of the fundamental principles required to design mobile networks.
- Exemplify a wide range of problems and research issues in the field of mobile networking.
- Demonstrate an understanding of the concepts, techniques, algorithms, and protocols employed in mobile data and cellular networks and be able to communicate these ideas to wider audience

Quiz 1

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 15 hours
Due: **Week 5**
Weighting: **20%**

Quiz 1 is a short test (close book) that will be based on your previously covered lecture material for weeks 1-4. The quiz questions will be handed over to you at the beginning of your Tutorial/ Practical class.

On successful completion you will be able to:

- Demonstrate in-depth knowledge and understanding of mobile technologies and apply them to solve practical real world problems in a professionally responsible manner.
- Demonstrate an understanding of the fundamental principles required to design mobile networks.
- Exemplify a wide range of problems and research issues in the field of mobile networking.
- Demonstrate an understanding of the concepts, techniques, algorithms, and protocols employed in mobile data and cellular networks and be able to communicate these ideas to wider audience

Assignment 2

Assessment Type [1]: Project
Indicative Time on Task [2]: 40 hours
Due: **Report: Week 11, Presentation: Week 12/13**
Weighting: **40%**

Students will leverage their knowledge of mobile networks 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. The project report (10 pages with citations) is due in week **11**. The Presentations are scheduled in weeks **11** and **12**.

On successful completion you will be able to:
- Demonstrate an understanding of the fundamental principles required to design mobile networks.
- Analyse the protocol architecture of mobile data and cellular networks.
- Exemplify a wide range of problems and research issues in the field of mobile networking.
- Demonstrate an understanding of the concepts, techniques, algorithms, and protocols employed in mobile data and cellular networks and be able to communicate these ideas to wider audience
- Evaluate critically a wide range of current trends and technologies in the field of mobile networking
- Engage in independent professional work with a high level of autonomy and accountability.

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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

COMP8280 is taught via lectures and informal tutorial sessions.

Note: There Are no Hurdles in this unit.

Lectures

Each lecture is a combination of live informal lecture session and aynchronous prerecorded lecture.

Asynchronous sessions i.e., pre-recorded weekly lectures will be made avilable on ilearn unit page which provides detailed explanation of the learning content. Students are expected to watch the pre-recorded weekly lectures to actively engage with the unit and prepare for tutorials/ practicals.

Live 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. In order for these live sessions to be worthwhile, we strongly urge the students to watch the recordings before attending these sessions..

Lecture recordings will be made available through Echo360.

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, Industry 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**. 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 2**0%** of the total mark and serves as a feedback mechanism to monitor your progress in the unit.

Assignments

Your assignment is to be submitted online using **Turnitin**.

Late Submission

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.

Tutorial

The tutorial gives you the opportunity to interact with your peers and with the lecturer. The tutorial sessions involve informal discussions with your peers and the lecturer. Each week you will be given problems to solve prior to the tutorial; preparing solutions is important because it will allow you to discuss the problems effectively with your lecturer and maximise the feedback you get on your work.

Practicals

Practical sessions will be held in the second half of the unit.

General Notes

In this unit, you should do the following:

- Attend lectures, take notes, ask questions.
- Attend your tutorial, seek feedback from your lecturer on your work.
- Prepare for and strive to do well in the three 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.

Required and Recommended Texts

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 lecturers every week.

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

- Aftab Ahmed, Wireless and Mobile Data Networks. John Wiley & Sons 2005.
- A. Jamalipour, The Wireless Mobile Internet: Protocols, Architectures, and Services, John Wiley & Sons Publishers, Chichester, UK, 2003.
- M. Grayson, K. Shatzkamer, K. Wierenga Building the Mobile Internet, Cisco Press, 2011

Unit Schedule

Lecture Schedule (Tentative)

Note: We anticipate that there may be some shifting of material depending on class progress during the lecture series.

Week	Topic		Reading
1	**Introduction**		Notes
2	**Medium Access Protocols**		Notes
3	**Wireless LAN Part I**		Notes
4	**Wireless LAN Part II**		Notes
5	**Mobile IP**	**Quiz 1**	Notes
6	**Cellular IP**		Notes
7	**Satellite Internet, Overview of Transport Protocols for Mobile and Wireless Networks**	**Assignment 1 Due**	Notes
8	**Introduction to Cellular Networks**		Notes
9	**Mobile Ad Hoc Networks**		Notes
10	**Quality of Service**	**Quiz 2**	Notes
11	**Mobile Communications Security**	**Assignment 2 Report due**	Notes
12	**Presentation**		
13	**Revision/Guest Lecture**		

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
- Grade Appeal Policy
- Complaint Management 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

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.

Standards and Grading

Grades

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.

• **Fail (FH)**: has obtained a raw mark over 50, yet failed all available attempt of at least one hurdle assessment.

• **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. **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.