



# COMP8280

## Mobile Data Networks

Session 2, Special circumstance, North Ryde 2020

*Department of Computing*

### Contents

<a href="#">General Information</a>	2
<a href="#">Learning Outcomes</a>	2
<a href="#">Assessment Tasks</a>	3
<a href="#">Delivery and Resources</a>	7
<a href="#">Unit Schedule</a>	8
<a href="#">Policies and Procedures</a>	9

#### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

#### 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

Rajan Shankaran

[rajan.shankaran@mq.edu.au](mailto:rajan.shankaran@mq.edu.au)

Rex Di Bona

[rex.dibona@mq.edu.au](mailto:rex.dibona@mq.edu.au)

Rex Di Bona

[rex.dibona@mq.edu.au](mailto:rex.dibona@mq.edu.au)

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.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#"><u>Quiz 1: Online</u></a>	20%	No	Week 5
<a href="#"><u>Quiz 2: Online</u></a>	20%	No	Week 10
<a href="#"><u>Assignment 1</u></a>	20%	No	Week 7
<a href="#"><u>Assignment 2</u></a>	10%	No	Week 9
<a href="#"><u>Assignment 3</u></a>	30%	No	Week 10: Report Due

### Quiz 1: Online

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 10 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 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 2: Online

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 10 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 held online in the tutorial 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 1

Assessment Type <sup>1</sup>: Problem set

Indicative Time on Task <sup>2</sup>: 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.

## Assignment 2

Assessment Type <sup>1</sup>: Problem set

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **Week 9**

Weighting: **10%**

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.

## Assignment 3

Assessment Type <sup>1</sup>: Project

Indicative Time on Task <sup>2</sup>: 40 hours

Due: **Week 10: Report Due**

Weighting: **30%**

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 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.

<sup>1</sup> 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.

<sup>2</sup> 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.

### Lectures

Lectures are online and are used to introduce mobile network technologies, protocols and design 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.

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**. 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 **20%** 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

Two Practical sessions will be held in this unit. Both the practical sessions are scheduled 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	Transport Protocols for Mobile and Wireless Networks	Assignment 1 Due	Notes
8	Cellular Networks: An Introduction		Notes
9	Mobile Ad Hoc Networks	Assignment 2 due	Notes
10	Quality of Service	Quiz 2	Notes
11	Presentation	Assignment 3 Report due	Notes
12	Presentation		
13	Exam Discussion/Guest Lecture		

## 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](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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](http://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](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/](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.