



# TELE8081

## Telecommunications Performance Management

Session 1, Weekday attendance, North Ryde 2020

*School of Engineering*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff

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44 WTR, Room 133

Wednesday 11am-12pm.

Credit points

10

Prerequisites

Admission to MEngNetTeleEng

Corequisites

Co-badged status

Unit description

This unit develops applied knowledge about computer-aided telecommunications system design and provides hands-on experience in performance management and optimisation analysis of modern and future telecommunications systems. It introduces the layered architecture of digital data communications systems from a practitioner's point of view and teaches how to design the layers and corresponding interfaces among them. The key telecommunications engineering performance indicators such as bit error rates, spectrum utilisation, throughput, delay and diversity will be studied in detail and they will be gauged by means of software-defined probes attached to the telecommunications system components designed in a computer simulation environment. The practical computer-aided signal processing and digital communications techniques to manage and optimise these key performance indicators will be taught for different communications environments in which transmitted data is corrupted by channel noise, fading or both.

## 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:** utilise the Matlab Communications Toolbox and Simulink environment to

characterise telecommunications system performance.

**ULO2:** design different layers of a digital telecommunications system and relevant interfaces between these layers.

**ULO3:** Articulate fundamental tradeoffs among key telecommunications performance indicators, e.g., bit error rate, capacity and delay, and main telecommunications resources such as power, frequency and space.

**ULO4:** demonstrate ability in the following areas of professional engineering practice: Ability to work in teams, analytical thinking, self-motivation and self-learning.

## 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

In order to pass this unit, a student must obtain a mark of 50 or more for the unit (i.e., obtain a passing grade P/CR/D/HD).

Late submissions of project reports are not accepted. Extenuating circumstances will be considered upon lodgment of an application for special consideration. For further details about grading, please refer to the policies and procedures section below.

### Final Examination:

If you receive [special consideration](#) for the final exam, a supplementary exam will be scheduled by the faculty during a supplementary exam period, typically about 3 to 4 weeks after the normal exam period. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

### Hurdle Requirements:

- The final examination is a hurdle requirement. A grade of 40% or more in the final examination is a condition of passing this unit. If you are given a second opportunity to sit the final examination as a result of failing to meet the minimum mark required, you will

be offered that chance during the supplementary examination period and will be notified of the exact day and time after the publication of final results for the unit. The second attempt at a hurdle assessment is graded as pass fail. The maximum grade for a second attempt is the hurdle threshold grade.

## 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](https://ask.mq.edu.au/account/pub/display/unit_status)

**There is no required textbook in the unit. Necessary and sufficient material will be covered during the lectures and workshop hours.**

The following open-source references on Matlab are highly recommended:

- *Communications Toolbox: Getting Started Guide*, MathWorks, 2018.
- *Communications Toolbox: User Guide*, MathWorks, 2018.

The unit will be project based and the emphasis on theory will be minimal. The following references are useful for some background material:

- *Communication Systems*, 5th ed., S. Haykin and M. Moher, John Wiley & Sons, 2009.
- *Modern Digital and Analog Communication Systems*, 4th ed., B. P. Lathi and Z. Ding, Oxford University Press, 2009.
- *Principles of Digital Communication*, 1st ed., R. G. Gallager, Cambridge University Press, 2008.

### Software

Matlab 2019b & Simulink by MathWorks are required. The required software will be available in the workshop computers. It can also be downloaded for home installation after registering for an online account with MathWorks - [mathworks.com](https://www.mathworks.com). For more information, please see:

<https://staff.mq.edu.au/intranet/science-and-engineering/services-and-resources/it-support-services/miscellaneous/matlab>

### Unit Web Page

Unit lecture notes, resources and other information about the unit can be accessed through iLearn.

## Technology used

The primary software tool used in workshops is Matlab. In addition to Matlab, standard library/ internet search engines and word processing software will be used.

## Workshop Session Safety

NO FOOD OR DRINK may be taken into the laboratory.

## 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](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>).

## 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](https://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/offices\\_and\\_units/information\\_technology/help/](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.