



TELE3021

Communication Systems

Session 2, Special circumstance 2020

School of Engineering

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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

Convenor and Lecturer

Sam Reisenfeld

sam.reisenfeld@mq.edu.au

Contact via E-mail

44 Waterloo Road, Room 135

Thursday, 4-6 pm

Tutor

Shahidul Islam

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Contact via E-mail

44 Waterloo Road, Room G53

Credit points

10

Prerequisites

((ELEC2040 or ELEC240) and (MATH235 or MATH2055)and (TELE3001 or STAT394)) or admission to MEngElecEng or MEngNetTeleEng

Corequisites

Co-badged status

Unit description

This unit explores: Fourier theory, including frequency-time duality; analogue amplitude and frequency modulation; digital communication systems, including sampling, modulation and demodulation methods, source and line coding, multi-symbol signalling; noise and its effects including noise types and spectrum, information capacity, noise measures, noise performance of digital communication systems, error-control coding and decoding; and communication-system case studies.

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: Design and analyze the performance of analogue communication systems

ULO2: Design and analyze the performance of digital communication systems

ULO3: Obtain the performance of communication systems using computer simulation

ULO4: Optimally select a communication system design for a particular application using power efficiency and bandwidth efficiency

General Assessment Information

A mark of 50 out of 100 is required to pass the unit. There are no hurdle tasks in this unit.

Laboratory Reports, the Communication Systems Report, and the Final Examination must be done independently by each student.

Assessment Tasks

Name	Weighting	Hurdle	Due
Final Examination	30%	No	Weeks 14-16
Laboratory Report	15%	No	3 November 2020
Communications Systems Report	55%	No	25 October 2020

Final Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 18 hours

Due: **Weeks 14-16**

Weighting: **30%**

Open book final examination in the formal exam period

On successful completion you will be able to:

- Design and analyze the performance of analogue communication systems
- Design and analyze the performance of digital communication systems
- Obtain the performance of communication systems using computer simulation
- Optimally select a communication system design for a particular application using power efficiency and bandwidth efficiency

Laboratory Report

Assessment Type ¹: Lab report

Indicative Time on Task ²: 10 hours

Due: **3 November 2020**

Weighting: **15%**

Report on Laboratory Work

On successful completion you will be able to:

- Design and analyze the performance of analogue communication systems
- Design and analyze the performance of digital communication systems
- Obtain the performance of communication systems using computer simulation
- Optimally select a communication system design for a particular application using power efficiency and bandwidth efficiency

Communications Systems Report

Assessment Type ¹: Report

Indicative Time on Task ²: 31 hours

Due: **25 October 2020**

Weighting: **55%**

5,000 word report on a major topic in Communication Systems

On successful completion you will be able to:

- Design and analyze the performance of analogue communication systems
- Design and analyze the performance of digital communication systems
- Obtain the performance of communication systems using computer simulation
- Optimally select a communication system design for a particular application using power efficiency and bandwidth efficiency

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

Lectures will be recorded on Echo Recording.

Lecture materials and Tutorial Questions will be uploaded to iLearn.

Laboratories will be done online using Matlab software and mathematical analysis.

Recommended readings are TELE3021 Lecture Notes and the following reference books:

S. Haykin, *Communication Systems*, 5th edition, Wiley.

B.P. Lathi and Z. Ding, *Modern Digital and Analog Communication Systems*, 4th edition, Oxford University Press.

L.W. Couch II, *Digital and Analogue Communication Systems*, 6th or 7th edition, Prentice-Hall.

S. Haykin and M. Moher, *Introduction to Digital and Analog Communication Systems*, 2nd edition, Wiley.

B. Sklar. *Digital Communications: Fundamentals and Applications*, 2nd edition, Prentice-Hall.

H. Nguyen, E. Shwedyk, *A First Course in Digital Communications*, 1st edition, Cambridge.

J.G. Proakis, M. Salehi, and G. Bauch, *Contemporary Communication Systems Using Matlab*, 2nd edition, C.L. Engineering.

D. Silage, *Digital Communication Systems using Matlab and Simulink*, Bookstand Publishing.

Won Y, Yang, *Matlab/Simulink for Digital Communication*, 1st edition, A-Jin Publishing.

The Mathworks, *Matlab & Simulink Student Edition*, Prentice-Hall.

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 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.