TELE8085

5G Mobile Networks

Session 2, Special circumstance 2020

School of Engineering

Contents

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
Unit Convener/Lecturer
Robert Abbas
robert.abbas@mq.edu.au
Contact via 98501558
44W Rd , Room 124
Tuesdays 12-1PM

Tutor
Roshan Pokharel
roshan.pokharel@mq.edu.au
Online

Credit points
10

Prerequisites
Admission to MEngNetTeleEng or Admission to MEngElecEng

Corequisites

Co-badged status

Unit description
This unit explores The most advanced technologies in the field of all IP Mobile
Communications Networks, 5G Vision and services , 5G Frequency band , 5G Physical layer,
Frame structure and physical layer Parameters , 5G Coverage , Channel models and link
Budget, 5G architecture and cloud RAN, Network Virtualization for 5G, Cloud computing , 5G
EMBB Application and requirements, 5G Ultra low latency (5G-V2X) and critical application
using Edge computing, 5G Massive connectivity and massive IoT, advanced and what lies
ahead in mobile communications, 5G Network operation and mobility, optimization and KPIs
Management , 5G security and advanced 5G application.

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: Describe 5G Network Vision, Architecture and use case

ULO2: Articulate knowledge of 5G Architecture, Cloud RAN and physical layer structure and parameters

ULO3: Competently apply deep knowledge of 5G Network Coverage, Capacity, operation and management and 5G security

ULO4: Critically analyse 5G Use case, 5G network security and Network performance management 5G Security

ULO5: Proficiently apply 5G standard, use cases, application, features, analytics for operators live network management

General Assessment Information

5G Tool Box/ Matlab for lab and project, and Final Exam

W1-W2,W3,W4,W5 : weekly Lab reports will be marked for 20%

Unit final exam will be marked 50% ,

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).

Assessment Tasks

Name	Weighting	Hurdle	Due
weekly	20%	No	W1,W2,W3,W4,W5
Group Project based leanring	30%	No	W6 proposal, W9 progress, W13 Presentation
Final Exam	50%	No	W13

weekly

Assessment Type [1]: Lab report
Indicative Time on Task [2]: 16 hours
Due: **W1,W2,W3,W4,W5**
Weighting: **20%**

5G Tool Box software simulate 5G fundamentals

On successful completion you will be able to:

- Describe 5G Network Vision, Architecture and use case
- Articulate knowledge of 5G Architecture, Cloud RAN and physical layer structure and parameters
- Competently apply deep knowledge of 5G Network Coverage, Capacity, operation and management and 5G security

Group Project based leanring

Assessment Type [1]: Project
Indicative Time on Task [2]: 18 hours
Due: **W6 proposal, W9 progress, W13 Presentation**
Weighting: **30%**

Project for 5G modern application

On successful completion you will be able to:

- Competently apply deep knowledge of 5G Network Coverage, Capacity, operation and management and 5G security
- Critically analyse 5G Use case, 5G network security and Network performance management 5G Security
- Proficiently apply 5G standard, use cases, application, features, analytics for operators live network management

Final Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 30 hours
Due: **W13**
Weighting: **50%**

Final Exam

On successful completion you will be able to:

- Describe 5G Network Vision, Architecture and use case
- Articulate knowledge of 5G Architecture, Cloud RAN and physical layer structure and parameters

- Competently apply deep knowledge of 5G Network Coverage, Capacity, operation and management and 5G security
- Critically analyse 5G Use case, 5G network security and Network performance management 5G Security
- Proficiently apply 5G standard, use cases, application, features, analytics for operators live network management

[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

100% Online Lectures, lab and projects

Unit Schedule

Tuesdays :10-12 PM Lectures Online real time zoom

Tuesdays : 5-7 PM Lab and project

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). 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). 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).

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.

Changes from Previous Offering

More 5G security Focus