COMP4336/9336 Mobile Data Networking
Course Outline for Term 2 2019

UOC: 6

Pre-requisites: COMP9331/3331 or any other introductory course on networking.

Description:

This course will examine the fundamental theories as well as the latest developments in mobile communication and networking. It will teach the basic concepts of wireless communication, mobile networking principles and protocols for both local and wide area, protocols for connecting smart objects to the Internet, and mobility management in the TCP/IP networks. An overview of some of the frontier wireless networking technologies, such as spectrum sharing, white-space networking and energy harvesting, will be provided. Learning emerging device functionalities and features, including the embedded sensors, will be part of this course, which requires some basic understanding of mobile device programming, such as Android and Java.

Note that the course description available in the university handbook may be slightly dated.

Learning Objectives:

1. To master the fundamental theories and concepts of wireless networking (Mid-session Test and Final Exam);
2. To analyse the key algorithms, protocols, and methods used by mobile networks (Mid- session Test and Final Exam);
3. To gain insight to the frontier technologies for mobile networking (Final Exam);
4. To experiment with the advanced capabilities of sensor-rich mobile devices (Lab and Assignment).

Teaching Strategies:

There will be a 3-hour lecture per week. In addition to lectures, there will be two 1-hour optional consultation slots each week. During these consulting hours, students having difficulty may seek further help on first come first serve basis. Additionally, there will be weekly self-assessed homeworks as well as quizzes to help students obtain regular feedback on individual progress in the course.

There are nine 2-hour laboratory sessions per week for weeks 1-9 with an instructor present for help. These practical works are designed for students to experiment with some of the advanced capabilities of sensor-rich mobile devices. Each lab will be worth 2 marks and the best 5 out of 8 (weeks 2-9) will be counted towards your 10% lab assessment.

Assessment

There are 4 assessment components each addressing a different learning objectives:

1. A multiple-choice test (**closed book**) to assess learning objectives 1-2.
2. A project assignment to assess learning objective 4.
3. Laboratory work for learning objective 4.
4. A **closed-book** (1 A4 notes allowed) final examination assessing learning objectives 1-3.

The weighting and due date of each assessment component are shown in the following Table.

Item	***Weighting***	Due
Mid-Session Test	20%	Week 6: 11am Friday, 12 July 2019
Lab Works	10%	During lab sessions
Project Assignment	20%	Week 9: 11:59pm Thursday, 01 August 2019
Final Exam	50%	End of Semester

There is no supplementary for laboratory works and mid-session test. For late submission of the assignment, 10% of the awarded marks will be deducted for each late day. No assignments will be accepted after one week of the original due date.

Overall and Final Assessment

Minimum requirements for obtaining a Pass grade or better are: a mark of 20 out of 50 (i.e. 40%) in the Final, *and* an overall grade of at least 50%. If you cannot clear the hurdle in the final exam (i.e. you get less than 40% in the final exam), the maximum final mark that can be reported is 40%.
Under special circumstances, the LIC reserves the right to scale marks up or down.

Continual Course Improvement

Student feedback on this course, and on the lecturing in this course, will be gathered towards the end of the session. Student feedback is taken seriously, and continual improvements are made to the course based in part on this feedback. The course questionnaire results go to the Head of the School of Computer Science and Engineering, who reads the results and follows up in cases where action is clearly needed.

In its last delivery in 2018, this course has received very positive feedback from the students. The mean rating for this course was well above the school and faculty averages, with 93.3 per cent of all responding students in general agreement that they were satisfied with the quality of this course. This is a direct result of us sincerely responding to student feedback received over the years. No major improvements are deemed necessary for the next delivery, but (as always) the lecturer-in-charge is dedicated to make the course even more stimulating by introducing new insights to recent developments in the field

Student Conduct

The **Student Code of Conduct** (Information, Policy) sets out what the University expects from students as members of the UNSW community. As well as the learning, teaching and research environment, the University aims to provide an environment that enables students to achieve their full potential and to provide an experience consistent with the University's values and guiding principles. A condition of enrolment is that students *inform themselves* of the University's rules and policies affecting them, and conduct themselves accordingly.

In particular, students have the responsibility to observe standards of equity and respect in dealing with every member of the University community. This applies to all activities on UNSW premises and all external activities related to study and research. This includes behaviour in person as well as behaviour on social media, for example Facebook groups set up for the purpose of discussing UNSW courses or course work. Behaviour that is considered in breach of the Student Code Policy as discriminatory, sexually inappropriate, bullying, harassing, invading another's privacy or causing any person to fear for their personal safety is serious misconduct and can lead to severe penalties, including suspension or exclusion from UNSW.

If you have any concerns, you may raise them with your lecturer, or approach the School Ethics Officer, Grievance Officer, or one of the student representatives.

Plagiarism is defined as using the words or ideas of others and presenting them as your own. UNSW and CSE treat plagiarism as academic misconduct, which means that it carries penalties as severe as being excluded from further study at UNSW. There are several on-line sources to help you understand what plagiarism is and how it is dealt with at UNSW:

- Plagiarism and Academic Integrity
- UNSW Plagiarism Procedure

Make sure that you read and understand these. Ignorance is not accepted as an excuse for plagiarism. In particular, you are also responsible that your assignment files are not accessible by anyone but you by setting the correct permissions in your CSE directory and code repository, if using. Note also that plagiarism includes paying or asking another person to do a piece of work for you and then submitting it as your own work.

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.

If you haven't done so yet, please take the time to read the full text of

- UNSW's policy regarding academic honesty and plagiarism

The pages below describe the policies and procedures in more detail:

- Student Code Policy
- Student Misconduct Procedure
- Plagiarism Policy Statement
- Plagiarism Procedure

You should also read the following page which describes your rights and responsibilities in the CSE context:

- Essential Advice for CSE Students

The following URL contains all the text and links for student conduct:
http://webapps.cse.unsw.edu.au/cse/student-conduct.html

Supplementary Exam

Students who missed the final exam due to extra-ordinary reason may be granted supplementary exam upon submission of special consideration application with valid evidence.

Text

There is no prescribed text for this course.

References (NOT compulsory)

Wireless communications, 2nd Ed, Prentice Hall, 2002, Theodore S. Rappaport

Lecturer in Charge (LIC)

Prof. Mahbub Hassan, Office Room 607 (Bldg K17, CSE) Tel: 9385 6198, email: mahbub.hassan at unsw.edu.au

LIC consultation hours are Fridays 9-11am in his office (Room 607, K17).

Lecture Time and Venue: Fridays 11am-2pm, Old Main Building 149.

Course Syllabus: The following topics will be covered (there may be minor variations):

Topic	Percentage
Introduction	5%
Wireless Fundamentals (modulation, coding, propagation)	10%
WiFi/IEEE 802.11/Wireless Local Area networks	20%
Internet of Things (Applications, Bluetooth, WPAN, IEEE 802.11ah, LoRa)	20%
Cellular Networks	15%
IP Mobility (network layer, transport layer, and application layer mobility management)	10%
Frontier Technologies (White Space Wireless Networking, Energy Harvesting Mobile Networks, Sensor-aided Wireless Networking)	20%

End of Course Outline