



MONASH University
Information Technology

FIT5187
Wireless networks

Unit Guide

Semester 2, 2012

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

Last updated: 18 Jun 2012

Table of Contents

<u>FIT5187 Wireless networks - Semester 2, 2012</u>	1
<u>Contact Hours</u>	1
<u>Workload</u>	1
<u>Unit Relationships</u>	1
<u>Prerequisites</u>	1
<u>Chief Examiner</u>	1
<u>Campus Lecturer</u>	1
<u>Academic Overview</u>	2
<u>Outcomes</u>	2
<u>Graduate Attributes</u>	2
<u>Assessment Summary</u>	2
<u>Teaching Approach</u>	2
<u>Feedback</u>	3
<u>Our feedback to You</u>	3
<u>Your feedback to Us</u>	3
<u>Previous Student Evaluations of this unit</u>	3
<u>Required Resources</u>	3
<u>Unit Schedule</u>	4
<u>Assessment Requirements</u>	5
<u>Assessment Policy</u>	5
<u>Assessment Tasks</u>	5
<u>Participation</u>	5
<u>Examinations</u>	6
<u>Examination 1</u>	6
<u>Assignment submission</u>	6
<u>Online submission</u>	6
<u>Extensions and penalties</u>	7
<u>Returning assignments</u>	7
<u>Other Information</u>	8
<u>Policies</u>	8
<u>Student services</u>	8

FIT5187 Wireless networks - Semester 2, 2012

This unit will review the basic concepts of networking technologies and analyse technological aspects of the wireless network. Main topics will include: antenna and propagation for wireless systems, fundamentals of physical layers used in wireless networks, wireless local area networks (WLAN/WiFi), WiMax systems, mobile network technologies (3G and LTE), mesh networks. Unit will also cover advanced topics in wireless networking.

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories and tutorials/wk

Workload

Students will be expected to spend a total of 12 hours per week during semester on this unit as follows:

- Lectures: 2 hours per week
- Tutorials/Lab Sessions: 2 hours per week per tutorial
- and up to an additional 8 hours in some weeks for completing lab and project work, private study and revision.

Unit Relationships

Prerequisites

Fundamental knowledge of computer and communication systems

Chief Examiner

Associate Professor Andrew Paplinski

Campus Lecturer

Academic Overview

Outcomes

At the completion of this unit students will be able to:

- describe the basic characteristics of layered protocol networking model and wireless mobile systems;
- understand architecture and signal characteristics of cellular communication systems;
- understand physical and media access control layers used in wireless technologies for signal encoding, spread spectrum and error control;
- understand architectures of: WiFi, WiMax, and advanced mobile networking systems like LTE as described in relevant standards;
- understand concepts behind mesh networks analyse advance topics in wireless networking.

Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:

- a. engage in an internationalised world
- b. exhibit cross-cultural competence
- c. demonstrate ethical values

critical and creative scholars who:

- a. produce innovative solutions to problems
- b. apply research skills to a range of challenges
- c. communicate perceptively and effectively

Assessment Summary

Examination (3 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Assignment - Research paper	20%	Week 8
Practical work assignments	20% total (4% each)	Weeks 2, 4, 6, 10, 11
Examination 1	60%	To be advised

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.

Feedback

Our feedback to You

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Solutions to tutes, labs and assignments

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through SETU, Student Evaluation of Teacher and Unit. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, and on student evaluations, see:

<http://www.monash.edu.au/about/monash-directions/directions.html>

<http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html>

Previous Student Evaluations of this unit

If you wish to view how previous students rated this unit, please go to

<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

- MATLAB
- Wireshark, Packet Analysis Software freely available from <http://www.wireshark.org/>
- inSSIDder, WiFi Analysis Software freely available from <http://www.metageek.net/products/inssider/>

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Overview of Wireless Networks	
2	Ethernet and TCP/IP protocols. Internet	Practical work assignment
3	Electromagnetic waves and antennas	
4	Wireless LAN Technology Fundamentals	Practical work assignment
5	Advanced Aspects of WLAN/WiFi Technology	
6	Physical Layer Fundamentals	Practical work assignment
7	Cellular Wireless Networks. 3G technologies	
8	4G/LTE Networks	Assignment - Research paper
9	WiMax Networks	
10	Mesh and ad hoc Networks	Practical work assignment
11	Wireless Personal Area Networks	Practical work assignment
12	Wireless Sensor Networks	
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

*Unit Schedule details will be maintained and communicated to you via your MUSO (Blackboard or Moodle) learning system.

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

(<http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu>)

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at

<http://lib.monash.edu/tutorials/citing/>

Assessment Tasks

Participation

- **Assessment task 1**

Title:

Assignment - Research paper

Description:

Investigate a paper selected from the journals listed below.

Write a set of PowerPoint presentations that explains details of the findings/results of the paper.

Present the paper and answer questions asked by the tutor and students.

The list of journals available electronically through Monash Library:

Wireless Networks, Springer

IEEE Wireless Communications

IEEE Communications Magazine

IEEE Transactions on Wireless Communications

IEEE Transactions on Mobile Computing

Journal of Wireless Communications & Mobile Computing (WCMC)

International Journal of Wireless Information Networks

Mobile Computing and Communications Review

Weighting:

20%

Criteria for assessment:

- ◆ Correctness and understanding - there may be more than one "right" answer in many cases.
- ◆ Completeness - that you have answered all parts of each question.
- ◆ Presentation - that you have presented your answers using the appropriate method.
- ◆ Use of evidence and argument - you are able to explain your position by using logical argument.

Due date:

Week 8

• **Assessment task 2**

Title:

Practical work assignments

Description:

Solve the problems set up in the tutorial and lab manuals.
5 practical assignments worth 4 marks each.

Weighting:

20% total (4% each)

Criteria for assessment:

- ◆ Correctness and understanding - there may be more than one "right" answer in many cases.
- ◆ Completeness - that you have answered all parts of each question.
- ◆ Presentation - that you have presented your answers using the appropriate method.
- ◆ Use of evidence and argument - you are able to explain your position by using logical argument.

Due date:

Weeks 2, 4, 6, 10, 11

Examinations

• **Examination 1**

Weighting:

60%

Length:

3 hours

Type (open/closed book):

Closed book

Electronic devices allowed in the exam:

None

Assignment submission

It is a University requirement

(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html>) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz).

Online submission

Use Moodle for all your online submissions.

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process:

<http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html>.

Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:

<http://policy.monash.edu.au/policy-bank/academic/education/index.html>

Key educational policies include:

- Plagiarism
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html>)
- Assessment
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-p>)
- Special Consideration
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.h>)
- Grading Scale
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html>)
- Discipline: Student Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html>)
- Academic Calendar and Semesters (<http://www.monash.edu.au/students/key-dates/>);
- Orientation and Transition (<http://www.infotech.monash.edu.au/resources/student/orientation/>);
and
- Academic and Administrative Complaints and Grievances Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy>)
- Codes of Practice for Teaching and Learning
(<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-tea>)

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at www.monash.edu.au/students. For Sunway see <http://www.monash.edu.my/Student-services>, and for South Africa see <http://www.monash.ac.za/current/>

The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to <http://www.lib.monash.edu.au> or the library tab in my.monash portal for more information. At Sunway, visit the Library and Learning Commons at <http://www.lib.monash.edu.my/>. At South Africa visit <http://www.lib.monash.ac.za/>.

Academic support services may be available for students who have a disability or medical condition. Registration with the Disability Liaison Unit is required. Further information is available as follows:

- Website: <http://monash.edu/equity-diversity/disability/index.html>;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus
- Telephone: 03 9905 5704, or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway

Last updated: 18 Jun 2012