FIT5191 Network protocols and network security - Semester 2, 2013

Module 1: In-depth coverage of the protocols used to operate the Internet and intranets, and a selection of major applications, including specific implementations of the protocols and systems. The topics include: Advanced Internet Addressing: IPv6, subnetting, supernetting. TCP Performance and Enhancements: Reno, New-Reno, Fast Retransmit and Recovery, etc. Unicast and multicast routing protocols: BGP4, OSPF, MOSPF, DVMRP, etc. Messaging systems: SMTP, MIME, POP3, IMAP. World Wide Web systems: client-server implementations, HTTP, Real Time Protocols: RTP, RTCP, RSVP. Security and Firewall. Quality of Service issues: DiffServ and IntServ. Network management and Remote File activities.

Module 2: This unit aims to provide students with fundamental knowledge of network and information security. Topics to be covered include network components and services, network computer systems and security policy, security at different system layers, basic cryptography and information security, information security and communications, intrusion detection system, malicious code and detection and prevention systems, authentication systems, and wireless security.

Contact Hours

10 hrs lectures/wk, 10 hrs tutorials/wk for 5 weeks

Workload requirements

Lectures: 2 hours per day
Tutorials/Lab Sessions: 2 hours per day per tutorial
and up to an additional 30 hours in some weeks for completing lab and project work, private study and revision.

Chief Examiner

Dr Iqbal Gondal

Campus Lecturer
Academic Overview

Learning Outcomes

At the completion of this unit students will:

- have a well-developed conceptual framework, enabling them to keep pace with developments in the rapidly changing field of network computing;
- have a thorough understanding of one or more specialised areas of study within network computing;
- be familiar with using current technology, systems and software relevant to network computing;
- be able to practise professionally as a network computing specialist;
- understand the fundamentals of Network Security issues including possible vulnerabilities in a computer system, software and hardware applications;
- be familiar with basic symmetric and asymmetric cryptography including symmetric and asymmetric crypto systems such as DES, RSA, RC4;
- understand authentication systems;
- understand security regime to prevent computer malicious codes such as viruses, logic bombs, etc;
- be familiar with security design at different levels of OSI model, IPSec, SSL, and security at application layer;
- understand the need of firewalls, detection and prevention systems.
## Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>Introduction</td>
<td>No formal assessment or activities are undertaken in week 0</td>
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<tr>
<td>1</td>
<td>Sessions 1-5 for network protocols</td>
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<tr>
<td>2</td>
<td>Sessions 6-10 for network protocols</td>
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<tr>
<td>3</td>
<td>Sessions 11-12 for network protocols and Sessions 1-3 Network security</td>
<td>Assignment 1 Presentations</td>
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<tr>
<td>4</td>
<td>Sessions 4-8 for network security</td>
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<tr>
<td>5</td>
<td>Sessions 9-12 for network security</td>
<td>Assignment 2 Presentations</td>
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<td>12</td>
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</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your learning system.*

## Assessment Summary

Examination (3 hours): 50%; In-semester assessment: 50%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
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</thead>
<tbody>
<tr>
<td>Assignment 1 Network protocols</td>
<td>25%</td>
<td>09/07/2013</td>
</tr>
<tr>
<td>Assignment 2 Network security</td>
<td>25%</td>
<td>25/07/2013</td>
</tr>
<tr>
<td>Examination 1</td>
<td>50%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>

## Teaching Approach

**Lecture and tutorials or problem classes**

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

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

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 1 Network protocols
  Description: Students need to model networks and study the roles of protocols for efficient communication.
  Weighting: 25%
  Criteria for assessment: Students need to demonstrate their work in an interview.
  Due date: 09/07/2013

• Assessment task 2

  Title: Assignment 2 Network security
  Description: Students need to demonstrate use IPTables to secure systems.
  Weighting: 25%
  Criteria for assessment: Students need to demonstrate their work in an interview and give a presentation.
  Due date: 25/07/2013

Examinations

• Examination 1

  Weighting: 50%
  Length: 3 hours
  Type (open/closed book): Closed book
Learning resources

Monash Library Unit Reading List
http://readinglists.lib.monash.edu/index.html

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
- Interviews
- Solutions to tutes, labs and assignments

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.monash.edu.au/exams/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.

Resubmission of assignments

Students should discuss with lecturer

Referencing requirements

Library Guides for Citing and Referencing at
http://guides.lib.monash.edu/content.php?pid=88267&sid=656564

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

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

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.

Softwares:

1. OPNET IT Guru® Academic Edition on Windows, free software from OPNET.com for teaching purposes
2. IPTABLE on Linux platform, free software
3. GPG on Linux platform, free software
4. Wireshark, free software
5. VMWare workstation free software Trail version

Prescribed text(s)

Limited copies of prescribed texts are available for you to borrow in the library.


Examination material or equipment

Exam will be closed book.
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: www.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 in Coursework Programs;  
- Special Consideration;  
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html
- 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/dates/
- Orientation and Transition;  
  http://intranet.monash.edu.au/infotech/resources/students/orientation/
- Academic and Administrative Complaints and Grievances Policy;  
  http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.html
- Code of Practice for Teaching and Learning;  
- Graduate Attributes Policy  
  http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.html

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 http://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/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to 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/.
**Disability Liaison Unit**

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

Website: [http://www.monash.edu/equity-diversity/disability/index.html](http://www.monash.edu/equity-diversity/disability/index.html)
Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway
Email: dlu@monash.edu
Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

**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 the Student Evaluation of Teaching and Units (SETU) survey. 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, see:

[www.monash.edu.au/about/monash-directions](http://www.monash.edu.au/about/monash-directions) and on student evaluations, see:
[www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html](http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html)

**Previous Student Evaluations of this Unit**

Previous feedback has highlighted the following strength(s) in this unit:

This unit gave a lot of information about the network and the assignments in this unit gave students the opportunity to practice the knowledge.

Student feedback has also informed improvements to this unit including: Lesser assignments and more practice to learn

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