FIT5191
Network protocols and network security

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.

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FIT5191 Network protocols and network security - Semester 2, 2012

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

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

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.

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: 50%; In-semester assessment: 50%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>25%</td>
<td>23/10/2012</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>25%</td>
<td>08/11/2012</td>
</tr>
<tr>
<td>Examination 1</td>
<td>25%</td>
<td>To be advised</td>
</tr>
<tr>
<td>Examination 2</td>
<td>25%</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.

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
- Interviews
- 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.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this unit

Previous feedback has highlighted that practical sessions should be used to reinforce student learning.

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

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
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.
# Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Introduction</td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>Sessions 1-5 for network protocols</td>
<td></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>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Sessions 9-12 for network security</td>
<td>Assignment 2 Presentations</td>
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<tr>
<td>6</td>
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<td>7</td>
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<tr>
<td>11</td>
<td></td>
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<tr>
<td>12</td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
</tbody>
</table>

*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

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 and give a presentation.
  
  Due date: 23/10/2012

• Assessment task 2
  
  Title: Assignment 2 Network security
  
  Description: Students need to demonstrate use of GPG and IPTables to secure systems.
  
  Weighting: 25%
  
  Criteria for assessment: Students need to demonstrate their work in an interview and give a presentation.
  
  Due date: 08/11/2012

Examinations

• Examination 1
  
  Weighting: 25%
  
  Length: 1.5 hours
  
  Type (open/closed book): Closed book
Assessment Requirements

Electronic devices allowed in the exam:
Calculators are allowed

• Examination 2

Weighting:
25%
Length:
1.5 hours
Type (open/closed book):
Closed book
Electronic devices allowed in the exam:
Calculators are allowed

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 VLE site for this unit, which you can access via links in the my.monash portal.

Extensions and penalties

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


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
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)
- 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/key-dates/);
- Orientation and Transition (http://www.infotech.monash.edu.au/resources/student/orientation/); and
- Codes of Practice for Teaching and Learning (http://www.policy.monash.edu/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teaching-and-learning.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 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