MONASH University
Information Technology

FIT3031
Information and network security

Unit Guide

Summer semester, 2015

Last updated: 28 Nov 2014

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FIT3031 Information and network security - Summer semester, 2015

This unit will provide students with an understanding of: OSI security architecture; common information risks and requirements; operation of encryption techniques; digital signatures; public key infrastructure; authentication and non-repudiation; intrusion detection and response; firewall defence; privacy and ethics issues; security configurations to PC-based applications; and design of information systems with security compliance and security standards and protocols.

Mode of Delivery

Clayton Summer semester B (Day)

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- 2 hours of lectures
- One 2-hour laboratory

(b.) Study schedule for off-campus students:

- Off-campus students generally do not attend lecture and tutorial sessions, however should plan to spend equivalent time working through the relevant resources and participating in discussion groups each week.

(c.) Additional requirements (all students):

- A minimum of 8 hours independent study per week for completing lab and project work, private study and revision.

See also Unit timetable information

Unit Relationships

Prohibitions

CPE3001, CPE2007, CSE2500, GCO2831, FIT2058, FIT3018, FIT4028, GCO4831

Prerequisites

One of ECE2041, FIT1005, FIT1031, FIT1019, FIT2008, CSE2318, CSE3318 or GCO1815

Chief Examiner

Dr Nandita Bhattacharjee

Campus Lecturer

Clayton

Dr Abdul Malik Khan

Consultation hours: To be advised

Tutors

Clayton

Dr Abdul Malik Khan

Consultation hours: To be advised

Rick Wu

Consultation hours: To be advised

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/ and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

The students in previous SETU evaluation requested that clear instructions be given to the hands on exercises. In this summer offering a clear step-by-step instructions to the hand'0n exercise will be provided. Also we will be using knoppix O.S under Virtual Machine which is a live iso version which contains all the open source cryptography tools that are built-in this version.

The positive feedbacks has been in the last offering was the students did appreciate the laboratory hand on exercises, so we will be continuously refining all the exercises with improvements and clear instructions. Also from the point of view of assessments the students did like the weekly online quizzes

which helped them to prepare and do well in the mid-semester tests. The students liked the quizzes and requested it be open for final exam preparation as well. So we will implement this request this summer semester offering.

The student feedback for last offering had been very positive with the following outcome and feedback of the students:

The student rated how the unit enabled them to achieve its learning objectives; the students rated it **4.67/5**. The students found and rated the unit to be intellectually stimulating to them; the students rated it 4.56/5. The learning resources provided to them to support the unit studies; the students rated it as **4.67/5**. Also the feedback for their assessments they received in this unit and how useful it was for them; the students rated it **4.56/5**. Finally the overall satisfaction with the quality of this unit the students rated it **4.75/5**.

If you wish to view how previous students rated this unit, please go to
https://emuapps.monash.edu.au/unitevaluations/index.jsp

Academic Overview

Learning Outcomes

At the completion of this unit, students should be able to:

- describe OSI security architecture and apply common security standards and protocols for network security applications e.g. electronic mail, IP, web and network management;
- critically assess threats, vulnerabilities and risks to an organisations information assets and propose control technologies and techniques which can be applied to reduce the security risk;
- apply cryptographic techniques to develop methods to disguise information to ensure its integrity, confidentiality and authenticity;
- describe the ethical, legal and criminal issues relating to the security of information and network systems;
- implement cryptographic algorithms and security protocols to provide security over networks and the Internet;
- design system security against intruders and malicious software;
- apply security configurations to computer and network based applications.

Unit Schedule

Week	Activities	Assessment
0	None .....Note: Activities are in Days and not in weeks!	No formal assessment or activities are undertaken in week 0
1	Day-1:Jan-06: Lecture LN01 on: OSI Security Architecture	
2	Day-2:Jan-07: Complete LN01; Start Lecture LN02 on: Symmetric Encryption	
3	Day-3:Jan-08: Complete LN02; Lecture Start LN03 on: Asymmetric Encryption	
4	Day-4:Jan-13: Lecture LN04 on: Authentication Application	
5	Day-5:Jan-14: Lecture LN05 on: Web Security	
6	Day-6:Jan-15: Lecture LN06 on: Wireless Security	Assignment 1 due on Monday 19 January 2015, 4:00 PM
7	Day-7:Jan-20: Lecture LN07 on: Electronic Mail Security	
8	Day-8:Jan-21: Lecture LN08 on: IP Security	
9	Day-9:Jan-22: Lecture LN09 on: Intrusion Detection and Response	
10	Day-10:Jan-27: Lecture LN10 on: Malicious Software Attack	Class Test on Tuesday 27 January 2015. The test will be held during the first hour of the lecture on 27 January 2015. It will cover material from LN01 to LN08 (inclusive of LN08 IP Security).
11	Day-11:Jan-28: Lecture LN11 on: Firewall	
12	Day-12:Jan-29: Lecture LN12 on: Network Management	
	SWOT VAC. Exam in official summer exam period 9-11 February 2015. (Scheduled with Examinations Branch)	No formal assessment is undertaken during SWOT VAC. Note: 3 hours of Final Exam To be Advised!
	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 learning system.

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach helps students to initially encounter information at lectures, discuss and explore the information during tutorials, and practice in a hands-on lab environment.

Assessment Summary

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

Assessment Task	Value	Due Date
Assignment 1	20%	Assignment 1 due on Monday 19 January 2015, 4:00 PM
Class Test	20%	Tuesday 27 January 2015, Day-10
Examination 1	60%	To be advised

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles
(http://intranet.monash.edu.au/infotech/resources/staff/edgov/policies/assessment-examinations/assessment-hurd

Academic Integrity - Please see resources and tutorials at
http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/

Assessment Tasks

Participation

- **Assessment task 1**

  Title:
  Assignment 1
  Description:
  This assignment is designed to test students' understanding of symmetric and asymmetric cryptographic concepts and how they can be applied in real world applications. In addition the concepts and network security applications in relation to web, wireless and electronic mail security will be tested. This will be based on the topics covered in Days 1 to 6 (until topic on Wireless Security).
  Weighting:
  20%
  Criteria for assessment:

  1. How well underlying principles and theories are demonstrated in the student's answer
  2. The appropriateness of the formatted report style
  3. The quality of the student's argument

  Further details will be provided in the assignment specification.
  Due date:
  Assignment 1 due on Monday 19 January 2015, 4:00 PM

- **Assessment task 2**

  Title:
  Class Test
  Description:
  This class test is designed to test students' understanding of security protocols and standard practices, including IP security. This will be based on the topics covered in **Days 1 to 8 (inclusive of LN08 - IP Security)**.

  Class Test is held on **Tuesday 27 January 2015**. The test will be held during the first hour of the lecture on **27 January 2015**. It will cover material from **LN01 to LN08 (inclusive of LN08 -IP Security)**.
  Weighting:
  20%
  Criteria for assessment:

1. How well underlying principles and theories are demonstrated in the student's answer
2. The quality of the student's argument

Further details will be provided in the class test specification.

Due date:

Tuesday 27 January 2015, Day-10

Examinations

- **Examination 1**

Weighting:

60%

Length:

3 hours

Type (open/closed book):

Closed book

Hurdle requirements:

40%

Electronic devices allowed in the exam:

None!

Learning resources

Monash Library Unit Reading List (if applicable to the unit)
http://readinglists.lib.monash.edu/index.html

Faculty of Information Technology Style Guide

Feedback to you

Examination/other end-of-semester assessment feedback may take the form of feedback classes, provision of sample answers or other group feedback after official results have been published. Please check with your lecturer on the feedback provided and take advantage of this prior to requesting individual consultations with staff. If your unit has an examination, you may request to view your examination script booklet, see
http://intranet.monash.edu.au/infotech/resources/students/procedures/request-to-view-exam-scripts.html

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

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Test results and feedback
- Quiz results
- Solutions to tutes, labs and assignments
- Other: Solutions to tutorials and four hand's on laboratory exercises will be discussed in tutorial class. Assignment feedback will be provided via comments.

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.

Assignment submission

It is a University requirement (http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-managing-pla 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). Please note that it is your responsibility to retain copies of your assessments.

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.

Software:
The software used in this unit is available in the public domain.

The software is PGP encryption software which is available at:
http://www.pgpi.org/products/pgp/versions/freeware/win32
& http://www.gpg4win.org/download.html

We will be using opensource knoppix O.S Virtual Machines run under VMware workstation/player software which is university licensed software and opensource wireshark packet analysis software for passive capture and analysis of cipher text.

In addition we will be using opensource built-in tools under knoppix O.S to study and understand encoding, decoding and encryption schemes using symmetric, Asymmetric encryption algorithms as hand's on exercises.

Prescribed text(s)

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

William Stallings. (2013). *Network Security Essentials: Applications and Standards.*. (5th Edition) Pearson International. (ISBN: 0133370437).

Recommended Resources

O. Poole. (2003). Network Security - A Practical Guide. () Butterworth Heinemann.
J. H. Allen. (2001). The CERT Guide to System and Network Security Practices. () Addison-Wesley.
M. Kaeo. (2004). Designing Network Security - A Practical Guide to Creating a Secure Network Infrastructure. () CISCO Press.
R. Oppliger. (2003). Security Technologies for the World Wide Web. () Artech House.

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:

- Student Academic Integrity Policy and Student Academic Integrity: Managing Plagiarism and Collusion Procedures ; http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.h
- Assessment in Coursework Programs; http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po
- Special Consideration; http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht
- 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.h

Faculty resources and policies

Important student resources including Faculty policies are located at http://intranet.monash.edu.au/infotech/resources/students/

Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.ht

Student Charter

www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.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 Malaysia 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 Malaysia, 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
- Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Commuity Services at 03 55146018 at Malaysia
- 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, Malaysia Campus