MONASH University
Information Technology

FIT3130
Computer network design and deployment

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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FIT3130 Computer network design and deployment - Semester 2, 2012

This unit aims to introduce the systematic top-down network design approach for designing enterprise computer networks. A top down process focuses on requirements analysis and architecture design, which should be completed before the selection of specific network components. The unit provides students with tested processes and tools to help them understand traffic flow, communication protocol behaviour, and internetworking technologies. On completion of the unit, students are equipped to design enterprise computer networks that meet an enterprise users requirements for functionality, capacity, performance, availability, scalability, affordability, security, and manageability.

Mode of Delivery

- Caulfield (Day)
- South Africa (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

- Lectures: 2 hours per week
- Practical classes/Tutorials: 2 hours per week
- Private study (revision, homework and practical class preparation): 8 hours per week

Unit Relationships

Prohibitions

CSE3821, CPE3004, CSE5807, FIT3030, FIT3024

Co-requisites

FIT2019 or FIT2020

Prerequisites

One of FIT1005, FIT2008, FIT2020, BUS2062, CPE1007, CSE2004, CSE2318, CSE3318 or GCO3812

Chief Examiner

Dr Jefferson Tan

Campus Lecturer

Caulfield

Suttisak Jantavongso

South Africa

Mohan Das

Academic Overview

Outcomes

At the completion of this unit students should have:

- a detailed knowledge and understanding of all major protocols used in LAN & WAN and WLAN;
- an understanding of major issues in implementing these protocols;
- a detailed knowledge and understanding of network architectures including interaction with firewalls;
- an awareness of the latest developments in TCP/IP (e.g. IPv6, IPSec, multicasting, VoIP, QoS, iSCSI);
- the knowledge and skills to implement and manage TCP/IP services within wired and wireless LANs;
- understand various measures of data network performance;
- exposition of network performance evaluation tool, Network packet analysers, and other performance measurement tools;
- use simulation packages to construct models of computer networks;
- use models for performance analysis and prediction;
- make recommendations for network performance improvement;
- practical skills in setting up TCP/IP connections and routing configurations for different environments;
- experience in setting up LANs and WANs, and wireless LANs using standard protocols.

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

Assessment Task	Value	Due Date
Group Assignment - Computer Network Design and Deployment Report and Presentation	30%	Presentation in Week 10 or Week 11 tutorial (to be scheduled); Report due Wednesday 3 October 2012, 4pm
Tutorial Participation	10%	This will be effective for all tutorials except when students are presenting their assignment, which is

graded separately.

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
- Quiz results

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

Previous feedback highlighted the appropriate use of case studies, which will be retained. Several students asked for more practical components, which will be improved this year, but while striking a balance with the theoretical foundations of the unit.

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

Recommended text(s)

P. Oppenheimer. (2011). *Top-Down Network Design.* (3rd) Cisco Press.

Unit Schedule

Week	Activities	Assessment
0	Students should register for tutorials	No formal assessment or activities are undertaken in week 0
1	Introduction of unit, Part I - Identifying network users' needs and goals: Analysing business goals and constraints; analysing technical goals and tradeoffs	
2	Characterising the existing internetwork; characterising network traffic	Tutorials start Week 2
3	Part II - Logical Network Design: designing a network topology	
4	Designing models for Addressing and Naming	
5	Selecting Switching and Routing Protocols	
6	Developing Network Security Strategies	
7	Developing Network Management Strategies	
8	Part III - Physical Network Design: Selecting Technologies and Devices for Campus Networks	
9	Selecting Technologies and Devices for Enterprise Networks	
10	Part IV - Testing, Optimizing, and Documenting Network Design: Testing the network design	Group Presentation in Week 10 tutorial (to be scheduled); Group Report due Wednesday 3 October 2012, 4pm
11	Optimizing your network design	Group Presentation in Week 11 tutorial (to be scheduled)
12	Documenting the network design	
	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:
  Group Assignment - Computer Network Design and Deployment Report and Presentation
  Description:
  Students are to write a multi-site campus network specifications document (business requirements and technical goals), carry out logical network design (topology and choice of routing protocols, etc.), selection of technologies and devices for physical design, use the simulation package to test some input traffic, observe the network performance and optimise the parts of networks to improve performance.
  Weighting:
  30%
  Criteria for assessment:
  Students will be assessed individually on their contribution to the group based project with respect to the formal group report and presentation by:

  - ♦ Quality of group presentation
  - ♦ Conciseness of report
  - ♦ Discussion of design specification
  - ♦ Evaluation of network design parameters (logical design)
  - ♦ Selection of internetworking devices and technology (physical design)
  - ♦ Design documentation, conclusion and limitation

  Due date:
  Presentation in Week 10 or Week 11 tutorial (to be scheduled); Report due Wednesday 3 October 2012, 4pm

- **Assessment task 2**

  Title:
  Tutorial Participation
  Description:
  Student learning can be enhanced by participation in class activities. Therefore, 10% of unit marks will come from taking part in verbal discussions and exercises during the tutorials.
  Weighting:
  10%
  Criteria for assessment:

> The tutor will encourage and keep track of student participation during tutorials, where students are expected to engage with evidence of understanding and prior preparation such as reading study materials ahead of the tutorial.

Due date:
> This will be effective for all tutorials except when students are presenting their assignment, which is graded separately.

Examinations

- **Examination 1**

Weighting:
> 60 %

Length:
> 2 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

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.

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-po
- 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 Commuity Services at 03 55146018 at Sunway

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