



MONASH University
Information Technology

FIT1005
Networks and data communications

Unit Guide

Semester 2, 2015

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FIT1005 Networks and data communications - Semester 2, 2015

This unit introduces students to fundamentals of distributed networked environment. It provides knowledge of internetworking standards and understanding of the networking architecture, technology and operation.

Mode of Delivery

Caulfield (Day)

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

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

- Two hours lectures
- Two hours laboratories

(b.) 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

BUS2062, BUS3150, CPE1007, CSE2004, CSE2318, CSE3318, CSE9801, GCO3812, FIT2008

Chief Examiner

Dr Abdul Khan

Campus Lecturer

Caulfield

Malik Khan

Tutors

Caulfield

Malik Khan

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

Semester-II 2014 students rated the Unit FIT1005 with the following outcome, The rating was high with the students expected outcome for this unit was satisfactory.

The unit enabled me to achieve its learning objectives = 4.22/5

I found the unit to be intellectually stimulating = 4.0/5

The learning resources in this unit supported my studies = 4.28/5

The feedback I received in this unit was useful = 4.28/5

Overall I was satisfied with the quality of this unit = 4.19/5

The organisation and progression of the topics in this unit made sense to me = 4.22/5

I was satisfied with the way practical and/or tutorial activities were conducted = 4.34/5

The assessment tasks helped me to develop the knowledge and skills required for this unit = 4.13/5

I was encouraged to actively participate in this unit = 4.31/5

The student wanted the maths content to be reduced in lectures and more to be added in the tutorial work; this will be incorporated with more worked out examples in the tutorials to help students understand better the mathematical concepts in data communications. The students enjoyed the hands-on exercises which was incorporated last semester, the unit now continues to include and teach hands-on practicals and a mid-term (unit) test. The coursework contents have been revised with application layer and transport layer with emphasis on network design and industry practices.

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:

- discuss network architecture standards for open systems;
- describe OSI reference Internet models;
- explain fundamentals and technologies of physical, data-link and network layers;
- describe the functions and architectures of LAN and WAN;
- analyse and design LAN architecture for organisational requirements;
- analyse data communication networks;
- cooperate effectively within small groups;
- present their work in various forms.

Unit Schedule

Week	Activities	Assessment
0	Students should register for tutorials	No formal assessment or activities are undertaken in week 0
1	LN1: Introduction to Data Communications, Data Networking, and Protocol Architecture	Tutorials start from Week 2
2	LN2: Data Transmission: Signals and their characteristics	Hands-On (HO) exercise HO-1 start
3	LN3: Transmission Media	
4	LN4: Signal Encoding Techniques	
5	LN4: Signal Encoding Techniques (End) LN5: Digital Data Communications Techniques	Assignment 1 due Friday 28 August 2015, 4:00 PM
6	LN6: Data Link Control Protocols	
7	LN7: Multiplexing	Hands-on Lab Practical Assessment during the tutorial/lab in Week 7
8	LN8: LAN Overview	Unit Test during lecture in Week 8
9	LN9: High Speed LANs	
10	LN10: Application: EMAIL, HTTP & DNS	
11	LN11: Internetworking-I	
12	LN12: Internetworking-II (continued)	Assignment 2 due Friday 23 October 2015, 4:00 PM
	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 learning system.

Teaching Approach

Lecture and tutorials or problem classes

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

Assessment Summary

Examination (2 hours): 50%; In-semester assessment: 50%

Assessment Task	Value	Due Date
Assignment 1	10%	Friday 28 August 2015, 4:00 PM
Assignment 2	15%	Friday 23 October 2015, 4:00 PM
Hands-on Lab Practical plus MCQ's	10%	During the tutorial/lab in Week 7 (between 7th - 11th

Unit Schedule

		September 2015)
Unit Test	15%	During the lecture in Week 8 (Week starting 14 September 2015)
Examination 1	50%	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-hurdles>)

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 tests your theoretical understanding of the introductory data communications concepts through a series of short answer questions.

Weighting:

10%

Criteria for assessment:

This assessment will test the first three learning Outcomes in the form of individuals researched and written assignment submission.

- ◆ discuss network architecture standards for open systems;
- ◆ describe OSI reference Internet models;
- ◆ explain fundamentals and technologies of physical, data-link and network layers;

This form of assessment is an individuals researched and written assignment submission and it will be marked based on the following criteria:

1. Completeness - that you have answered all parts of each question.
2. Presentation - that you have presented your answers in a suitably formatted report style.
3. Use of evidence and argument - you are able to explain your position by using logical argument drawing on the theory presented in the unit.

Due date:

Friday 28 August 2015, 4:00 PM

• Assessment task 2

Title:

Assignment 2

Description:

This assessment will test the remaining five learning outcomes of this unit. This is in the form of small group project report on enterprise network backbone design and structured LAN design. The second assignment specifications are in a form of request for proposal (RFP) which is a solicitation, often made through a bidding process, by a company interested in procurement of an installation contract service to potential suppliers to submit

Assessment Requirements

a proposals

The report will adhere to the industry standard used in network design with well researched design concepts and submitted as a response to a Request for Proposal (RFP) in a written assignment submission.

- ◆ describe the functions and architectures of LAN and WAN;
- ◆ analyse and design LAN architecture for organisational requirements;
- ◆ analyse data communication networks;
- ◆ cooperate effectively within small groups;
- ◆ present their work in various forms.

This group assignment provides an opportunity for you to work in a project as a group member and apply data communications concepts to a practical networking design. You will be required to analyse a case study and make networking recommendations based on the user requirements. This assignment will also allow you to present your solutions in a formal report format. Contributions from individual members of a project group will be described in the formal report. Such data will be used to individualise student marks in cases of substantially inequitable work put in by members of a given group.

Weighting:

15%

Criteria for assessment:

1. Correctness and understanding - there may be more than one "right" answer in many cases. We will look for answers that reflect understanding of the underlying principles and theories.
2. Completeness - that you have answered all parts of each question.
3. Presentation - that you have presented your answers in a suitably formatted report style.
4. Use of evidence and argument - you are able to explain your position by using logical argument drawing on the theory presented in the unit.

A marking guide will be provided on the unit website detailing the over all marks distribution and for allocating marks in a way that recognises different contributions of group members for this assessment.

Due date:

Friday 23 October 2015, 4:00 PM

• **Assessment task 3**

Title:

Hands-on Lab Practical plus MCQ's

Description:

Students will be asked to perform a set of networking tasks in the lab and note their results. The results will be assessed.

Weighting:

10%

Criteria for assessment:

1. Assessment criteria will be based on Hands-On exercises 1 & 2 and Multiple choice questions.
2. Completeness - that you have answered all parts of each question.
3. Presentation - that you have presented your answers in a suitably formatted report style.

Due date:

During the tutorial/lab in Week 7 (between 7th - 11th September 2015)

• **Assessment task 4**

Title:

Unit Test

Description:

A one-hour unit test will be conducted during the lecture of Week 8. It will be closed book, and no electronic devices will be permitted except for non-programmable calculators.

Weighting:

15%

Criteria for assessment:

This assessment criteria will test the five Learning Outcomes of the unit. This is an individual class test and a closed book test to evaluate and access these learning outcomes of the unit.

- ◆ discuss network architecture standards for open systems;
- ◆ describe OSI reference Internet models;
- ◆ explain fundamentals and technologies of physical, data-link and network layers;
- ◆ describe the functions and architectures of LAN and WAN.

Due date:

During the lecture in Week 8 (Week starting 14 September 2015)

Remarks:

Only non-programmable calculators will be allowed in the test.

Examinations

• **Examination 1**

Weighting:

50%

Length:

2 hours

Type (open/closed book):

Closed book

Electronic devices allowed in the exam:

Only non-programmable calculators will be allowed in the exam.

Learning resources

Reading list

- Behrouz A. Forouzan, *Data Communications and Networking*, 4th Edition, 2007, or 5th Edition 2013 McGraw-Hill.
- David Stamper et al, *Business Data Communications*, 6th Edition, 2003, Prentice Hall.
- Fred Halsall, *Data Communications, Computer Networks, and Open Systems*, 4th Edition, 1998, Addison-Wesley
- Kurose and Ross, *Computer Networking – A top-down approach*, 6th Edition, 2012.

Monash Library Unit Reading List (if applicable to the unit)

<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
- Test results and feedback
- Solutions to tutes, labs and assignments
- Other: Graded hands-on exercise

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 electronic submission). 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.

Prescribed text(s)

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

William Stallings. (2007 or 2012 or 2014 (latest)). *Data and Computer Communications*. (8th or 9th or 10th (latest) Edition) Prentice Hall (ISBN: ISBN-13: 978-0133506488).

Technological Requirements

All Students enrolled in this unit must regularly check Moodle for announcements, subscribe to the discussion forums, and check for updated information on Lectures, Tutorials, Labs and Hands-On exercises. Students are encouraged to bring their own laptops so they can test and use open source

Assessment Requirements

tools and utilities and run virtual machines. It is not compulsory to have a laptop as the Lab have a desktop computers which are used in the laboratories.

Recommended Resources

Wireshark is a open source tool that allows packet traces to be sniffed, captured and analysed. Before Wireshark (or in general, any packet capture tool) is used, careful consideration should be given to where in the network packets are to be captured. Refer to the [wireshark.org](http://www.wireshark.org) wiki for technical details on various deployment scenarios. For all platforms, you can download a binary or installer from <http://www.wireshark.org>.

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

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.h>

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 Community 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