MONASH University
Information Technology

FIT2020
Network architecture

Unit Guide

Semester 1, 2015

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.

Last updated: 16 Feb 2015

Table of Contents

FIT2020 Network architecture - Semester 1, 2015

This unit will introduce students to advances in the distributed networked environment. The unit provides knowledge of internetworking protocols, QoS for critical applications, network management and TCP/IP operation. Access to the university's computer systems through an internet service provider is compulsory for distance education students.

Mode of Delivery

- Gippsland (Off-campus)
- South Africa (Day)

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

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

- Two hours of lectures
- One 2-hour tutorial

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

- Off-campus students generally do not attend lecture, tutorial and laboratory 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 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.

See also Unit timetable information

Unit Relationships

Prohibitions

GCO3824

Prerequisites

One of FIT1031, FIT1005 or GCO3812 or equivalent

Chief Examiner

Dr Carlo Kopp

Campus Lecturer

Gippsland

Joarder Kamruzzaman

South Africa

Mohan Das

Tutors

Gippsland

Joarder Kamruzzaman

South Africa

Mohan Das

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

Based on previous student feedback this unit is well structured and no changes have been made for this semester.

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 will be able to:

- describe the ISO OSI reference model;
- analyse physical layer for networking;
- understand the architecture of data link layer for networking;
- analyse the main functions and design issues of the network layer;

describe the operation of IPv6;

- analyse the operation of TCP;
- understand integrated and differentiated services architecture;
- understand network management architecture;
- understand the basic concepts of multimedia communications and QoS.

Unit Schedule

Week	Activities	Assessment
0	Orientation week	No formal assessment or activities are undertaken in week 0
1	Concepts of Protocols and Layered Architecture	
2	Physical Layer: Data and Signals - Theoretical Concepts	
3	Physical Layer: Transmission Media	
4	Data Link Layer: Communication Techniques	
5	Data Link Layer: HDLC	
6	Wide Area Network: Circuit and Packet Switched Networks	Assignment 1 due on Friday 17 April 2015 (midnight)
7	Routing Schemes and congestion Control	
8	Internetworking and IP	
9	Internetworking and IP Version 6 (IPv6)	
10	Internetworking Operation	
11	Transport Layer Operation: TCP and UDP	Assignment 2 due on Friday 22 May 2015 (midnight)
12	Application Layer: Network Management and Multimedia	
	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

The teaching and learning approach provides facilitated learning, practical exploration and peer learning, equipping you with the ability to apply skills upon completion

Assessment Summary

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

Assessment Task	Value	Due Date
Assignment 1	15%	Friday 17 April 2015 (midnight)
Assignment 2	25%	Friday 22 May 2015 (midnight)
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 will test concepts of (i) layered approach of data communication framework, (ii) theoretical concept behind data, signals and network capacity, and (ii) physical and data link layer technologies and protocols. Students need to answer questions in the assignment that will test the above concepts and understanding. The assignment is an individual submission.
  Weighting:
  15%
  Criteria for assessment:
  Student should demonstrate their full and correct understanding of the topics to be tested in the assignment questions. "Completeness and correctness" of the answer are the criteria for grading. Partial marks in proportion will be awarded if only part of a question is correctly answered.
  Due date:
  Friday 17 April 2015 (midnight)

- **Assessment task 2**

  Title:
  Assignment 2
  Description:
  This assignment will test concepts of wide area networks, routing protocols, transport layer, network management, QoS and application layer. This assignment will require students to do lab works using simulation software OPNET and include results and their interpretations to support their answers. The assignment is an individual submission.
  Weighting:
  25%
  Criteria for assessment:
  Students should demonstrate skills in WAN, routing protocols, transport layer, network management and application layer by demonstrating the "correct and complete interpretation" of the simulation results in response to varied protocol and network parameters.
  Due date:
  Friday 22 May 2015 (midnight)

Examinations

- **Examination 1**

Weighting:
60%
Length:
3 hours
Type (open/closed book):
Closed book
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

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
- 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.

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.

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.

OPNET software trial version from OPNET.COM (free for teaching and learning purposes).

Wireshark software from wireshark.org (free).

Prescribed text(s)

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

William Stallings. (2013). *Data and Computer Communications*. (10th Edition) Prentice Hall.

Kevin Brown and Leann Christianson. (2004). *Opnet Lab Manual - Data and Computer Communications*. (7th Edition) Addison Wesley Longman.

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.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