



**MONASH** University  
Information Technology

**FIT2020**  
**Network architecture**

**Unit Guide**

**Semester 1, 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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# **FIT2020 Network architecture - Semester 1, 2012**

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

## **Contact Hours**

2 hrs lectures/wk, 2 hrs tutorials/wk

## **Workload**

For on campus students, workload commitments are:

- two-hour lecture and
- two-hour tutorial
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.
- You will need to allocate up to 5 hours per week in some weeks, for use of a computer, including time for newsgroups/discussion groups.

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

## **Unit Relationships**

### **Prohibitions**

GCO3824

### **Prerequisites**

One of FIT1031, FIT1005 or GCO3812 or equivalent

## **Chief Examiner**

Associate Professor Joarder Kamruzzaman

## **Campus Lecturer**

### **Gippsland**

**Joarder Kamruzzaman**

### **South Africa**

**Oladayo Bello**

## **Tutors**

### **Gippsland**

**Joarder Kamruzzaman**

### **South Africa**

**Oladayo Bello**

# Academic Overview

## 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.

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

<b>Assessment Task</b>	<b>Value</b>	<b>Due Date</b>
Assignment 1	15%	8th April 2012
Assignment 2	25%	18th May 2012
Examination 1	60%	To be advised

## 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

## 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
- 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.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

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

## Required Resources

Please check with your lecturer before purchasing any Required Resources. Prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

OPNET software trail version from OPNET.COM (Free for teaching and learning purposes)

Wireshark free software from website (wireshark.org)

## Prescribed text(s)

Prescribed texts are available for you to borrow in the library.

William Stallings. (2007). *Data and Computer Communications*. (Eighth edition) Prentice Hall.

Academic Overview

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

## **Recommended Resources**

## 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 a Theoretical Concepts	
3	Physical layer: Transmission Media	
4	Data Link layer: Communication Techniques	
5	Data link layer: HDLC	
6	WAN: Circuit and Packet Switched	Assignment 01 due 8th April 2012
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 02 due 18th May 2012
12	Application layer: Network Management and Multimedia	.
	SWOT VAC	No formal assessment is undertaken SWOT VAC
	Examination period	LINK to Assessment Policy: <a href="http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html">http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html</a>

\*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>)

## Assessment Tasks

### Participation

- **Assessment task 1**

**Title:**

Assignment 1

**Description:**

This assignment will test concepts of layered approach, physical and data link layers

**Weighting:**

15%

**Criteria for assessment:**

Student should demonstrate skills in OSI model, internetworking, physical & data link layers

**Due date:**

8th April 2012

- **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 also require students to do lab work and include results to support their answers.

**Weighting:**

25%

**Criteria for assessment:**

Students should demonstrate skills in WAN, routing protocols, transport layer, network management and application layer.

**Due date:**

18th May 2012

## Examinations

- **Examination 1**

**Weighting:**

60%

**Length:**

3 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-p>)
- 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](http://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](mailto: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

Other Information

## Other

### READING LIST:

- William Stallings, *Data Communications and Networking*, Prentice Hall, 8th Edition, 2007
- Kevin Brown and Leann Christianson, *Opnet Lab Manual – Data and Computer Communications*. 7/e.