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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# Table of Contents

**FIT2020 Network architecture - Semester 1, 2012** ......................................................... 1
- Mode of Delivery ............................................................................................................... 1
- Contact Hours .................................................................................................................... 1
- Workload .......................................................................................................................... 1
- Unit Relationships ............................................................................................................ 1
  - Prohibitions ..................................................................................................................... 1
  - Prerequisites ................................................................................................................... 1
- Chief Examiner ................................................................................................................... 1
- Campus Lecturer ............................................................................................................... 2
  - Gippsland ......................................................................................................................... 2
  - South Africa .................................................................................................................... 2
- Tutors ................................................................................................................................. 2
  - Gippsland ......................................................................................................................... 2
  - South Africa .................................................................................................................... 2

**Academic Overview** ....................................................................................................... 3
- Outcomes ........................................................................................................................... 3
- Graduate Attributes ......................................................................................................... 3
- Assessment Summary ...................................................................................................... 3
- Teaching Approach .......................................................................................................... 4
- Feedback ............................................................................................................................ 4
  - Our feedback to You ........................................................................................................ 4
  - Your feedback to Us ........................................................................................................ 4

**Previous Student Evaluations of this unit** ..................................................................... 4
**Required Resources** ....................................................................................................... 4
**Prescribed text(s)** .......................................................................................................... 4
**Recommended Resources** ............................................................................................. 5

**Unit Schedule** ................................................................................................................ 6

**Assessment Requirements** ............................................................................................ 7
- Assessment Policy ............................................................................................................ 7
- Assessment Tasks ............................................................................................................. 7
  - Participation ..................................................................................................................... 7
- Examinations ..................................................................................................................... 7
  - Examination 1 ............................................................................................................... 7
- Assignment submission ................................................................................................. 8
- Online submission .......................................................................................................... 8
- Extensions and penalties ............................................................................................... 8
- Returning assignments ................................................................................................. 8

**Other Information** .......................................................................................................... 9
- Policies ............................................................................................................................... 9
- Student services .............................................................................................................. 9
- Other ................................................................................................................................ 10
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%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>15%</td>
<td>8th April 2012</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>25%</td>
<td>18th May 2012</td>
</tr>
<tr>
<td>Examination 1</td>
<td>60%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>
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.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

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.


**Recommended Resources**
# Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Orientation week</td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>Concepts of Protocols and Layered Architecture</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Physical Layer: Data and Signals a Theoretical Concepts</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Physical layer: Transmission Media</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Data Link layer: Communication Techniques</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Data link layer: HDLC</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>WAN: Circuit and Packet Switched</td>
<td>Assignment 01 due 8th April 2012</td>
</tr>
<tr>
<td>7</td>
<td>Routing Schemes and congestion Control</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Internetworking and IP</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Internetworking and IP Version 6 (IPv6)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Internetworking Operation</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Transport Layer Operation: TCP and UDP</td>
<td>Assignment 02 due 18th May 2012</td>
</tr>
<tr>
<td>12</td>
<td>Application layer: Network Management and Multimedia</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken SWOT VAC</td>
</tr>
<tr>
<td></td>
<td>Examination period</td>
<td>LINK to Assessment Policy:</td>
</tr>
</tbody>
</table>

*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

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.


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:

Key educational policies include:

- Plagiarism
  (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html)
- Assessment
- Special Consideration
  (http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html)
- Grading Scale
  (http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html)
- Academic Calendar and Semesters (http://www.monash.edu.au/students/key-dates/);
  and
- Academic and Administrative Complaints and Grievances Policy
  (http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.html)
- Codes of Practice for Teaching and Learning

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

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 Community Services at 03 55146018 at Sunway
Other

READING LIST: