FIT9005
Computer architecture and networks

Unit Guide

Semester 1, 2012

Last updated: 13 Feb 2012

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FIT9005 Computer architecture and networks - Semester 1, 2012

This unit introduces students to fundamentals of computer hardware and software, and networking. The unit provides knowledge of computer structure and operation, including Arithmetic-Logic Unit, computer registers, internal bus, memory; system software, including compilers and operating systems; and computer networking and data communication.

Mode of Delivery

- Caulfield (Day)
- Gippsland (Off-campus)

Contact Hours

2 hrs lectures/wk, 2 hrs tutorials/wk

Workload

Students will be expected to spend a total of 12 hours per week during semester on this unit as follows:

- 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

FIT1005, FIT1031, FIT9018, FIT9020, BUS4150, BUS5112, CPE4002, CSE4884, CSE9801

Co-requisites

FIT9004 or FIT9017

Prerequisites

Proficiency in basic mathematics.

Chief Examiner

Professor Ingrid Zukerman

Campus Lecturer

Caulfield

Ingrid Zukerman, Consultation hours: Wednesday 1pm - 2 pm

Gippsland

Abdullah Yusuf

Academic Overview

Outcomes

At the completion of this unit students will have -
Developed the ability to:

- understand basic Computer Structure and Operation and demonstrate use of the associated vocabulary;
- demonstrate knowledge of Arithmetic-Logic Unit, computer registers, Internal Bus, Memory, I/O organisations and interfacing standards;
- describe the operation of the CPU and explain how it is used to execute instructions;
- demonstrate an understanding of the basics of operating systems software using examples from File Systems, User Interfaces and Software Development Tools;
- discuss network architecture standards for open systems;
- describe TCP/IP network protocol;
- understand the fundamental functions and architectures of LAN and WAN.

Developed attitudes that enable them to:

- adopt a problem solving approach;
- accept the code of professional conduct and practice;
- act in accordance with best practice, industry standards and professional ethics.

Demonstrated the communication and teamwork skills necessary to:

- cooperate effectively within small groups;
- present their work in various forms.

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%

Assessment Task	Value	Due Date
Mid-semester test	12%	

		Tuesday, 1 May 2012, 11am
Tutorial tests 1, 2, 3, 4	28% total (7% each)	Weeks 5, 7, 10, 12
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
- Test results and feedback
- Quiz results
- 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

Previous evaluations of this unit have been very positive. After feedback from Semester 1, 2011, a more detailed coverage of computer architecture was introduced.

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.

SPIM. MIPS Simulator: http://www.csse.monash.edu.au/packages/smartAnimator/

Wireshark. Packet Analysis Software: http://www.wireshark.org/

Recommended Resources

D. Tarnoff, Downloadable textbook: *Computer organization and design fundamentals.*

Recommended text(s)

L. Null and J. Lobur. (2006). *Essentials of Computer Organization and Architecture.* (2nd) Jones and Bartlett Publishing (ISBN: 0-7637-3769-0).

A.S. Tannenbaum. (2006). *Structured Computer Organization.* (5th) Prentice Hall (ISBN: 9780131485211).

J.F. Kurose and K.W. Ross. (2010). *Computer Networking: A Top-Down Approach.* (5th) Addison-Wesley Publishers (ISBN: 978-0136-07967-5).

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	LN1: Overview of unit; history of computing; overview of computer organisation; why we learn this unit	
2	LN2: Data representation and computer arithmetic (I)	
3	LN2: Data representation and computer arithmetic (II)	
4	LN3: Boolean algebra and digital logic	
5	LN4: Computer architecture	Tutorial test 1: LN1-LN2
6	LN4: Computer architecture, LN5: System software	
7	LN5: System software, LN6: Operating systems	Tutorial test 2: LN3-LN4
8	LN6: Operating systems	
9	LN7: Introduction to computer networks	Mid-semester test: LN1-LN5 on Tuesday, 1 May 2012, 11am
10	LN8: Applications layer	Tutorial test 3: LN5-LN6
11	LN9: Transport layer	
12	LN10: Network layer	Tutorial test 4: LN7-LN8
	SWOT VAC	No formal assessment is undertaken 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

Assessment Tasks

Participation

- **Assessment task 1**

  Title:
  Mid-semester test
  Description:
  Test includes material taught in modules LN1-LN5.
  Weighting:
  12%
  Criteria for assessment:
  Due date:
  Tuesday, 1 May 2012, 11am

- **Assessment task 2**

  Title:
  Tutorial tests 1, 2, 3, 4
  Description:

  - Test 1: modules LN1-LN2
  - Test 2: modules LN3-LN4
  - Test 3: modules LN5-LN6
  - Test 4: modules LN7-LN8

  Weighting:
  28% total (7% each)
  Criteria for assessment:
  How well principles and procedures are demonstrated in the student's answers.
  Due date:
  Weeks 5, 7, 10, 12

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-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/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

Reading list

- J. FitzGerald and A. Dennis, *Business Data Communications and Networking*, 10th Edition, John Wiley & Sons Publishers, 2009, ISBN 978-0470-05575-5.
- Sebastian Coope, John Cowley and Neil Willis, *Computer Systems: Architecture, Networks and Communications,* McGraw-Hill, 2002. ISBN: 978-0077098032.
- Miles Murdocca and Vincent Heuring, *Computer Architecture and Organization: An Integrated Approach,* Wiley, 2007. ISBN: 978-0471733881.