MONASH University
Information Technology

**FIT1001
Computer systems**

Unit Guide

Semester 2, 2010

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

FIT1001 Computer systems - Semester 2, 2010

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Introduction

Welcome to FIT1001 Computer Systems.

Unit synopsis

This unit will introduce students to basic computer hardware and operating systems software with emphasis on the concepts required to understand the low-level and internal operations of computer systems. In particular, this includes study of data representation, simple digital logic, computer organisation including CPU, memory and input/output devices, as well as system software and operating system concepts. The intention is to provide opportunities for students to relate the hardware knowledge covered in this unit to the concepts learned in their introductory programming and systems analysis classes and to give a more complete understanding of how hardware and software are used to build systems. This provides opportunities for students to relate the use of programming languages and studies of system design and project management to their implementation on computer hardware.

Learning outcomes

At the completion of this unit students will be able to:

- understand basic Computer Structure and Operation and demonstrate use of the associated vocabulary;
- demonstrate an understanding of the concepts of Data Representation, Computer Arithmetic and Boolean Algebra using appropriate methods of implementation;
- demonstrate knowledge of Internal Bus, Memory, I/O organisations and interfacing standards;
- describe the internal operation of the CPU and explain how it is used to execute instructions;
- demonstrate an understanding of the basics of operating systems and system software; and
- identify factors that affect computer performance.

Contact hours

2 hrs lectures/wk, 2 hrs tutorials/wk

Workload

For on campus students, workload commitments are:

- two one-hour lectures per week (or one two-hour lecture per week)
- 12 two-hour tutorials, starting in week 2.
- a minimum of 1.5 hours of personal study per 1 hour of contact time in order to satisfy the reading and assignment expectations.This gives a total of at least 6 hours of study per week.

Unit relationships

Prohibitions

CSE1201, CPE1002, GCO2812

Teaching and learning method

Teaching approach

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS,
http://mutts.monash.edu.au/MUTTS/

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system:
http://allocate.its.monash.edu.au/

Unit Schedule

Week	Date*	Topic	Study guide	Key dates
1	19/07/10	Introduction and Basic concepts of computing	Unit intro, LN 1	
2	26/07/10	Data Representation & Arithmetic	LN 1 and LN 2	
3	02/08/10	Data Representation & Arithmetic	LN 2	
4	09/08/10	Boolean algebra & Digital Logic	LN 2 and LN 3	
5	16/08/10	Boolean algebra & Digital Logic	LN 3	Tutorial Test on LN1/LN2; during the weekly tutorial session
6	23/08/10	Computer Architecture	LN 3 and LN 4	
7	30/08/10	Computer Architecture	LN 4	Tutorial Test on LN3; during the weekly tutorial session
8	06/09/10	Instruction set Architecture	LN 4 and LN 5	
9	13/09/10	Instruction set Architecture	LN 5	Mid-Semester Test; during the second lecture hour of the week
10	20/09/10	Memory components	LN 6	Tutorial Test on LN4 & LN5; during the weekly tutorial session
Mid semester break				
11	04/10/10	System software	LN 6 and LN 7	
12	11/10/10	Operating systems	LN 8	Tutorial Test on LN6 & LN7; during the weekly tutorial session
13	18/10/10	Revision	All	

*Please note that these dates may only apply to Australian campuses of Monash University. Off-shore students need to check the dates with their unit leader.

Unit Resources

Prescribed text(s) and readings

Null L., Lobur J., *Essentials of Computer Organization and Architecture*, second edition, Jones and Bartlett (2006) ISBN 0-7637-3769-0.

Text books are available from the <u>Monash University Book Shops</u>. Availability from other suppliers cannot be assured. The Bookshop orders texts in specifically for this unit. You are advised to purchase your text book early.

Recommended text(s) and readings

A. S. Tanenbaum, *Structured Computer Organization*, 5th Edition, Pearson Prentice-Hall, 2006, ISBN 0-13-148521-0
S. G. Shiva,*Computer Organization, Design and Architecture,*4th Edition, CRC Press, 2008, ISBN 13-978-0-8493-0416-3
W. Stallings, *Computer Organization and Architecture*, 7th Edition, Pearson Prentice-Hall, 2006, ISBN 0-13-185644-8
S. D. Burd, *Systems Architecture*, 5th edition, Thomson Course Technology, 2006, ISBN 0-619-21692-1
S. Dandamudi, *Fundamentals of Computer Organization and Design,* Springer, ISBN 0-387-95211-X
I. Englander: *The Architecture of Computer Hardware and Systems Software*, 3rd Edition, Wiley, 2003, 0-471-07325-3
W. Stallings, *Operating Systems Internals and Design Principles*, 5th edition, Pearson Prentice Hall, 2005, ISBN 0-13-127837-1
A. S. Tanenbaum, *Modern Operating Systems*, 2nd edition, Prentice Hall, 2001, ISBN 0-13-092641-8

Study resources

Study resources we will provide for your study are:

Lecture Notes and tutorial sheets will be made available to the students via the FIT1001 MUSO Moodle website.

Short extracts from a number of text books will be made available to all students via the FIT1001 MUSO Moodle website.

The FIT1001 web site on MUSO, where lecture slides, tutorial exercises, practical assignment specifications, sample solutions, software and supplementary material will be available.

Newsgroups and eMail discussion lists available via the FIT1001 unit web site.

Assessment

Overview

Examination (3 hours): 70%; In-semester assessment: 30%

Faculty assessment policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit.

The unit is assessed with 4 tutorial class tests run during tutorial session , an one hour mid-semester test run during lecture hour and a three hour closed book examination.

Assignment tasks

Assignment coversheets

Assignment coversheets are available via "Student Forms" on the Faculty website:
http://www.infotech.monash.edu.au/resources/student/forms/
You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

Assignment submission and preparation requirements will be detailed in each assignment specification. 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.

- **Assignment task 1**

     Title:
          Four tutorial tests on LN1 and LN2, LN3, LN4 and LN5, LN6 and LN7 (On-campus students only)
     Description:
          Closed-book test held during the tutorial. 1 hour duration.
     Weighting:
          5% each test
     Criteria for assessment:
     Due date:
          Weeks 5, 7, 10 and 12
     Remarks:

> **OCL students** will be asked to complete two assignments in place of all on-campus tests (details see the remarks section of the next assignment task.

- **Assignment task 2**

  Title:
  > TEST (on-campus students only)

  Description:
  > Closed-book test held during the lecture. 1 hour duration.

  Weighting:
  > 10%

  Criteria for assessment:

  Due date:
  > Week 9

  Remarks:
  > **OCL students** will be asked to complete two assignments, each with a weighting of 15% in place of all the on-campus tests.
  >
  > Assignment 1: due Week 8
  >
  > Assignment 2: due Week 12

Examination

-
  Weighting:
  > 70%

  Length:
  > 3 hours

  Type (open/closed book):
  > Closed book

  Electronic devices allowed in the exam:
  > None

  Remarks:
  > exam hurdle 40% of exam mark

See Appendix for End of semester special consideration / deferred exams process.

Due dates and extensions

Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms: http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html

Return dates

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Feedback

Types of feedback you can expect to receive in this unit are:

Informal feedback on progress in labs/tutes

Appendix

Please visit the following URL: http://www.infotech.monash.edu.au/units/appendix.html for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams

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