FIT9005
Computer architecture and networks

Unit Guide

Semester 2, 2009

Last updated : 13 Jul 2009

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FIT9005 Computer architecture and networks - Semester 2, 2009

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Introduction

Welcome to FIT9005 Computer Architecture and Networks for semester 2, 2009. FIT9005 is a core unit introduced as a part of the common core for the Master of Business Systems, Master of Business Systems Professional, MIMS and MIMS Professional degrees. All IT students need to have exposure to this topic area because knowledge of computer architecture and networks, leads to greater understanding of the operational issues of information systems such asdata storage, retrieval and system integration. This allows designers and programmers to specify, design, develop and debug IT applications and analyse IT systems more effectively.

Unit synopsis

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, I/O organisations and interfacing standards. Fundamentals of computer networking and data communication will be also provided.

Learning outcomes

At the completion of this unit, students should be able to:

1. understand basic computer structure and operation and demonstrate use of the associated vocabulary;
2. demonstrate knowledge of Arithmetic-Logic Unit, computer registers, internal bus, memory, I/O organisations and interfacing standards;
3. describe the operation of the CPU and explain how it is used to execute instructions;
4. demonstrate an understanding of the basics of operating systems software using examples from file systems, user Interfaces and software development tools;
5. discuss network architecture standards for open systems;
6. describe TCP/IP network protocol;
7. understand the fundamental functions and architectures of LAN and WAN.

At the completion of this unit students will have developed attitudes that enable them to:

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

At the completion of this unit students will demonstrate the communication skills necessary to:

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

Contact hours

4 hrs/week

Workload

- 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

BUS4150, BUS5112, CPE4002, CSE4884, CSE9801

Relationships

FIT9005 is a core unit in the Master of Business Systems, Master of Business Systems Professional,MIMS and MIMS Professional degrees.

There are no prerequisites for this unit..

You may not study this unit and

BUS5112, BUS4150, CPE4002, CSE4884, CSE9801

in your degree.

Teaching and learning method

- Lectures
- Tutorials
- Unit also available in OCL mode, involving printed notes and/or on-line materials and internet based discussion groups.

Lectures will be used to present concepts and the relationships between ideas, and so guide the student through a structured outline of the material derived from, but not necessarily identical to that provided by the text books and online resources. Tutorials sessions will be used to link the theory with practice and enhance student understanding.

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.cc.monash.edu.au/

Unit Schedule

Week	Topic	Study guide	Key dates
1	Overview of unit; history of computing; overview of computer organization; overview of networks; why we learn this unit	LN01	
2	Data representation; number systems and conversion; unicode	LN02	
3	Basic computer logic and operations	LN03	
4	CPU and instruction architecture	LN04	
5	Memory and I/O architecture	LN05	
6	System Software	LN06	Assignment 1 Due
7	Operating System	LN07	
8	Networking: Introductory concepts	LN08	
9	Application Layer. How web and e-mail work	LN09	
10	LANs and the internet	LN10	
Mid semester break			
11	Transport Layer	LN11	Assignment 2 Due
12	Network Layer	LN12	
13	Revision	All	

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.

- **Jerry FitzGerald and Alan Dennis**, Business Data Communications and Networking, Wiley, 10th Edition, 2009

Text books are available from the Monash University Book Shops. 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

- **Sebastian Coope, John Cowley and Neil Willis,** Computer Systems: Architecture, Networks and Communications, McGraw-Hill, ISBN: 978-0077098032, 2002.
- Miles Murdocca, Vincent Heuring, Computer Architecture and Organization. An Integrated Approach., Wiley, 2007

Required software and/or hardware

Wireshark. The packet Analysys Software

Equipment and consumables required or provided

Students studying off-campus are required to have the minimum system configuration specified by the Faculty as a condition of accepting admission, and regular Internet access. On-campus students, and those studying at supported study locations may use the facilities available in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook. You will need to allocate up to **n** hours per week for use of a computer, including time for newsgroups/discussion groups.

Study resources

Study resources we will provide for your study are:

- Weekly detailed lecture notes outlining the learning objectives, discussion of the content, required readings and exercises;
- Weekly tutorial or laboratory tasks and exercises with sample solutions provided one to two weeks later;
- Assignment specifications and sample solutions;
- A sample examination;
- Access to past examination papers;
- Discussion groups;
- This Unit Guide outlining the administrative information for the unit;
- The unit web site on Moodle, where resources outlined above will be made available.

Assessment

Overview

Examination (3 hours): 60%; Assessments: 40%.

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 44% then a mark of no greater than 44-N will be recorded for the unit.

Assessment for the unit consists of **2** assignments with a weighting of **20%** each and an examination with a weighting of **60%**. Read this section VERY carefully.

To pass this unit, a student must obtain :

- 40% or more in the unit's examination and
- 40% or more in the unit's 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 assessment then a mark of no greater than 44-N will be recorded for the unit.

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 task 1**

  Title:
  Assignment 1
  Description:
  The Assignment will test students understanding of basic Computer Structure and Operation. In particular the assignment tasks will be related to topics discussed in weeks 1 to 6.

Weighting:
20%
Due date:
Week 6

- **Assignment task 2**

Title:
Assignment 2
Description:
Th assignment will test students understanding of the topics related to data communications and networking as discussed in weeks 7 to 11.
Weighting:
20%
Due date:
Week 11

Examination

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

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

Late assignment

Assignments received after the due date will be subject to a penalty of 5% per day, including weekends. Assignments received later than one week (seven days) after the due date will not normally be accepted. In some cases, this period may be shorter if there is a need to release sample solutions.

This policy is strict because comments or guidance will be given on assignments as they are returned, and sample solutions may also be published and distributed, after assignment marking or with the returned assignment.

Return dates

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

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