

FIT9005
Computer architecture and networks

Unit guide

Semester 1, 2009

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FIT9005 Computer architecture and networks - Semester 1, 2009

Unit leader :

Andrew Paplinski

Lecturer(s) :

Caulfield

- Andrew Paplinski
- John Hurst
- Suttisak Jantavongso

Gippsland

- Dengsheng Zhang

Introduction

Welcome to FIT9005 Computer Architecture and Networks for semester 1, 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 as data 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

FIT9005 Computer Architecture and Networks will introduce 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

Knowledge and Understanding

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

- Understand basic Computer Structure and Operation and demonstrate use of the associated vocabulary.
- Demonstrate knowledge of 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 ISO reference and Internet models.
- Understand the functions and architectures of LAN and WAN.

Attitudes, Values and Beliefs

At the completion of this unit students will have 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

Relationships, Communication and TeamWork

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

- Cooperate effectively within small groups
- Present their work in various forms

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

Prerequisites

There are no prerequisites for this unit.

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.

Continuous improvement

Monash is committed to 'Excellence in education' (Monash Directions 2025 - <http://www.monash.edu.au/about/monash-directions/directions.html>) and strives for the highest possible quality in teaching and learning.

To monitor how successful we are in providing quality teaching and learning Monash regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through Unit Evaluation Surveys. The University's Unit Evaluation policy (<http://www.policy.monash.edu/policy-bank/academic/education/quality/unit-evaluation-policy.html>) requires that every unit offered is evaluated each year. Students are strongly encouraged to complete the surveys as they are an important avenue for students to "have their say". The feedback is anonymous and provides the Faculty with

evidence of aspects that students are satisfied and areas for improvement.

Faculties have the option of administering the Unit Evaluation survey online through the my.monash portal or in class. Lecturers will inform students of the method being used for this unit towards the end of the semester.

Student Evaluations

If you wish to view how previous students rated this unit, please go to <http://www.adm.monash.edu.au/cheq/evaluations/unit-evaluations/>

Improvements to this unit

As a result of student feedback and the staff review, the topics have been modified so that the contents of the computer architecture has been reduced to six weeks, whereas the computer networking aspects have been increased to 5 weeks. In addition the introductory lectures have been re-worked to give students more motivational material.

Unit staff - contact details

Unit leader

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Dr Suttisak Jantavongso

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.

Communication, participation and feedback

Monash aims to provide a learning environment in which students receive a range of ongoing feedback throughout their studies. You will receive feedback on your work and progress in this unit. This may take the form of group feedback, individual feedback, peer feedback, self-comparison, verbal and written feedback, discussions (on line and in class) as well as more formal feedback related to assignment marks and grades. You are encouraged to draw on a variety of feedback to enhance your learning.

It is essential that you take action immediately if you realise that you have a problem that is affecting your study. Semesters are short, so we can help you best if you let us know as soon as problems arise. Regardless of whether the problem is related directly to your progress in the unit, if it is likely to interfere with your progress you should discuss it with your lecturer or a Community Service counsellor as soon as possible.

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	LN04	
5	Memory; storage devices; input/output;	LN05	
6	System software;	LN06	Assignment 1 Due
Mid semester break			
7	Operating System	LN07	
8	Internet structure. LANs and WANs. Network models: OSI and Internet models	LN08	
9	Application layer	LN09	
10	Network layer	LN10	
11	Transport layer	LN11	Assignment 2 Due
12	Physical 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.

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

Jerry FitzGerald and Alan Dennis, Business Data Communications and Networking, Wile, 10th Edition, 2009

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.

Library access

The Monash University Library site contains details about borrowing rights and catalogue searching. To learn more about the library and the various resources available, please go to <http://www.lib.monash.edu.au>.

The Educational Library and Media Resources (LMR) is also a very resourceful place to visit at <http://www.education.monash.edu.au/library/>

Monash University Studies Online (MUSO)

All unit and lecture materials are available through MUSO (Monash University Studies Online). Blackboard is the primary application used to deliver your unit resources. Some units will be piloted in Moodle. If your unit is piloted in Moodle, you will see a link from your Blackboard unit to Moodle (<http://moodle.monash.edu.au>) and can bookmark this link to access directly. In Moodle, from the Faculty of Information Technology category, click on the link for your unit.

You can access MUSO and Blackboard via the portal: <http://my.monash.edu.au>

Click on the Study and enrolment tab, then Blackboard under the MUSO learning systems.

In order for your Blackboard unit(s) to function correctly, your computer needs to be correctly configured.

For example:

- Blackboard supported browser
- Supported Java runtime environment

For more information, please visit: <http://www.monash.edu.au/muso/support/students/downloadables-student.html>

You can contact the MUSO Support by phone : (+61 3) 9903 1268

For further contact information including operational hours, please visit:
<http://www.monash.edu.au/muso/support/students/contact.html>

Further information can be obtained from the MUSO support site:
<http://www.monash.edu.au/muso/support/index.html>

Assessment

Unit assessment policy

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 Task**

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%

Criteria for assessment :

The assignment will be mark according to the **relevance** and **correctness** of the answer:

- ◆ irrelevant answer will be considered incorrect
- ◆ Fully correct answer will be given the full mark allocated to the particular question
- ◆ Partially correct answer will be given part of the maximum mark allocated for the

Students must try to correctly answer all questions to maximise the final mark.

Due date : Week 6

• **Assignment Task**

Title : Assignment 2

Description :

The assignment will test students' understanding of the topics related to data communications and networking as discussed in weeks 7 to 11.

Weighting : 20%

Criteria for assessment :

The assignment will be marked according to the **relevance** and **correctness** of the answer:

- * irrelevant answer will be considered incorrect
- * Fully correct answer will be given the full mark allocated to the particular question
- * Partially correct answer will be given part of the maximum mark allocated for the

Students must try to correctly answer all questions to maximise the final mark.

Due date : Week 11

Examinations

• **Examination 1**

Weighting : 60%

Length : 3 hours

Type (open/closed book) : Closed book

Assignment submission

Caulfield and Clayton students must submit their assignments as a hardcopy to a respective School Office.

Gippsland students must submit their assignments electronically to the Webface:

<http://wfsubmit.its.monash.edu.au/>

University and Faculty policy on assessment

Due dates and extensions

The due dates for the submission of assignments are given in the previous section. 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 seldom regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

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.

Assessment for the unit as a whole is in accordance with the provisions of the Monash University Education Policy at <http://www.policy.monash.edu/policy-bank/academic/education/assessment/>

We will aim to have assignment results made available to you within two weeks after assignment receipt.

Plagiarism, cheating and collusion

Plagiarism and cheating are regarded as very serious offences. In cases where cheating has been confirmed, students have been severely penalised, from losing all marks for an assignment, to facing disciplinary action at the Faculty level. While we would wish that all our students adhere to sound ethical conduct and honesty, I will ask you to acquaint yourself with the University Plagiarism policy and procedure (<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html>) which applies to students detected plagiarising.

In this University, cheating means seeking to obtain an unfair advantage in any examination or any other written or practical work to be submitted or completed by a student for assessment. It includes the use, or attempted use, of any means to gain an unfair advantage for any assessable work in the unit, where the means is contrary to the instructions for such work.

When you submit an individual assessment item, such as a program, a report, an essay, assignment or other piece of work, under your name you are understood to be stating that this is your own work. If a submission is identical with, or similar to, someone else's work, an assumption of cheating may arise. If you are planning on working with another student, it is acceptable to undertake research together, and discuss problems, but it is not acceptable to jointly develop or share solutions unless this is specified by your lecturer.

Intentionally providing students with your solutions to assignments is classified as "assisting to cheat" and students who do this may be subject to disciplinary action. You should take reasonable care that your solution is not accidentally or deliberately obtained by other students. For example, do not leave copies of your work in progress on the hard drives of shared computers, and do not show your work to other students. If you believe this may have happened, please be sure to contact your lecturer as soon as possible.

Cheating also includes taking into an examination any material contrary to the regulations, including any bilingual dictionary, whether or not with the intention of using it to obtain an advantage.

Plagiarism involves the false representation of another person's ideas, or findings, as your own by either copying material or paraphrasing without citing sources. It is both professional and ethical to reference clearly the ideas and information that you have used from another writer. If the source is not identified, then you have plagiarised work of the other author. Plagiarism is a form of dishonesty that is insulting to the reader and grossly unfair to your student colleagues.

Register of counselling about plagiarism

The university requires faculties to keep a simple and confidential register to record counselling to students about plagiarism (e.g. warnings). The register is accessible to Associate Deans Teaching (or nominees) and, where requested, students concerned have access to their own details in the register. The register is to serve as a record of counselling about the nature of plagiarism, not as a record of allegations; and no provision of appeals in relation to the register is necessary or applicable.

Non-discriminatory language

The Faculty of Information Technology is committed to the use of non-discriminatory language in all forms of communication. Discriminatory language is that which refers in abusive terms to gender, race, age, sexual orientation, citizenship or nationality, ethnic or language background, physical or mental ability, or political or religious views, or which stereotypes groups in an adverse manner. This is not meant to preclude or inhibit legitimate academic debate on any issue; however, the language used in such debate should be non-discriminatory and sensitive to these matters. It is important to avoid the use of discriminatory language in your communications and written work. The most common form of discriminatory language in academic work tends to be in the area of gender inclusiveness. You are, therefore, requested to check for this and to ensure your work and communications are non-discriminatory in all respects.

Students with disabilities

Students with disabilities that may disadvantage them in assessment should seek advice from one of the following before completing assessment tasks and examinations:

- Faculty of Information Technology Student Service staff, and / or
- your Unit Coordinator, or
- Disabilities Liaison Unit

Deferred assessment and special consideration

Deferred assessment (not to be confused with an extension for submission of an assignment) may be granted in cases of extenuating personal circumstances such as serious personal illness or bereavement. Information and forms for Special Consideration and deferred assessment applications are available at <http://www.monash.edu.au/exams/special-consideration.html>. Contact the Faculty's Student Services staff at your campus for further information and advice.