



MONASH University

FIT5173
Digital communications technology and protocols

Unit guide

Semester 1, 2009

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Table of Contents

<u>FIT5173 Digital communications technology and protocols - Semester 1, 2009</u>	1
<u>Unit leader</u> :.....	1
<u>Lecturer(s)</u> :.....	1
<u>Clayton</u>	1
<u>Introduction</u>	1
<u>Unit synopsis</u>	1
<u>Learning outcomes</u>	1
<u>Workload</u>	1
<u>Unit relationships</u>	2
<u>Prerequisites</u>	2
<u>Relationships</u>	2
<u>Continuous improvement</u>	2
<u>Student Evaluations</u>	2
<u>Unit staff - contact details</u>	2
<u>Unit leader</u>	2
<u>Lecturer(s)</u> :.....	3
<u>Teaching and learning method</u>	3
<u>Communication, participation and feedback</u>	3
<u>Unit Schedule</u>	3
<u>Unit Resources</u>	4
<u>Prescribed text(s) and readings</u>	4
<u>Recommended text(s) and readings</u>	4
<u>Equipment and consumables required or provided</u>	4
<u>Study resources</u>	4
<u>Library access</u>	4
<u>Monash University Studies Online (MUSO)</u>	4
<u>Assessment</u>	5
<u>Unit assessment policy</u>	5
<u>Assignment tasks</u>	5
<u>Examinations</u>	6
<u>Assignment submission</u>	6
<u>University and Faculty policy on assessment</u>	6
<u>Due dates and extensions</u>	6
<u>Late assignment</u>	6
<u>Return dates</u>	7
<u>Plagiarism, cheating and collusion</u>	7
<u>Register of counselling about plagiarism</u>	7
<u>Non-discriminatory language</u>	8
<u>Students with disabilities</u>	8
<u>Deferred assessment and special consideration</u>	8

FIT5173 Digital communications technology and protocols - Semester 1, 2009

Unit leader :

Andrew Paplinski

Lecturer(s) :

Clayton

- Andrew Paplinski

Introduction

This is a postgraduate elective unit for students specialising in data communications and networking. It builds on an undergraduate computer communications unit and investigates advanced topics from the area of digital communications, network technologies and protocols.

Unit synopsis

ASCED Discipline Group Classification: 020113 Networks and Communications

The first component of this unit looks at digital communication technologies such as: local area networks; metropolitan area networks; satellite networks; ISDN; modem techniques; digital networks. The second component covers protocols including: the structure, coordination and management of the Internet; Internet standards development process; Internet link layer protocols; IP (V4 and V6) and ICMP protocols; TCP and UDP; the Internet addressing structure, including domain naming and the DNS/LDAP systems and protocols; bridging systems and spanning-tree protocols; Internet packet routing techniques and protocols; mobile IP; Real Time Protocols; the major common applications.

Learning outcomes

- understand the general architecture of the Internet, the interworking of the key protocols, and the underlying services required for the operation of the network;
- understand the standards development process for protocols and applications operating in the Internet;
- have knowledge of the characteristics of the key protocols in the Internet, and the roles they play
- understand the key quality of service issues applying to the Internet.
- knowledge of local area network design and implementation techniques.

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.

Unit relationships

Prerequisites

Before attempting this unit you must have satisfactorily completed

For MAIT students, FIT9017, FIT9018, FIT9019, FIT9030, FIT9020 and FIT4037.

, or equivalent.

Relationships

FIT5173 is an unit in the data communications specialisation of the MIT and MAIT degrees.

You may not study this unit and

ECE4411 ECE5411 CSE4881 CSE4882 ECE4044 FIT4015 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/>

Unit staff - contact details

Unit leader

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Associate Professor

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Lecturer(s) :

Associate Professor Andrew Paplinski

Associate Professor

Phone +61 3 990 53242

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Teaching and learning method

Lectures will provide students with theory and demonstrations of the discussed concepts.

Tutorials will be used to study the practical aspects of the material presented in lectures.

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	Key dates
1	Review of basic data communication concepts	
2	Application Layer	
3	Physical layer	
4	Data Link Layer	
5	Transport layer functions	
6	IP layer 1	
Mid semester break		
7	IP layer 2	
8	Local area network	
9	Backbones networks	
10	Metropolitan and wide area networks	
11	The internet	
12	Network design	
13	Revision	

Unit Resources

Prescribed text(s) and readings

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

Recommended text(s) and readings

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 8 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/laboratory tasks and exercises with sample solutions provided one to two weeks later;
- Sample class tests and suggested solutions
- 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

To pass this unit a student must obtain an overall unit mark of 50% or more

Assignment tasks

- **Assignment Task**

Title : Assignment1

Description :

Assignment 1 will include the material covered in weeks 1-5.

Particular questions will be related to: components of networks, type of networks, internet models, message transmission using layers, application layer architectures, physical and data link layers.

Weighting : 20%

Criteria for assessment :

The criteria used to assess submissions are:

- ◆ Correctness and understanding - there may be more than one "right" answer in many cases.
- ◆ Completeness - that you have answered all parts of each question.
- ◆ Presentation - that you have presented your answers using the appropriate method.
- ◆ Use of evidence and argument - you are able to explain your position by using logical argument.

Due date : week 6

- **Assignment Task**

Title : Assignment 2

Description :

Assignment 2 will include the material covered in weeks 6-10. In particular, the questions will be related to network and transport layers, structures and functions of local area, backbone and wide area networks.

Weighting : 20%

Criteria for assessment :

The criteria used to assess submissions are:

- ◆ Correctness and understanding - there may be more than one "right" answer in many cases.
- ◆ Completeness - that you have answered all parts of each question.
- ◆ Presentation - that you have presented your answers using the appropriate method.
- ◆ Use of evidence and argument - you are able to explain your position by using logical argument.

Due date : week 10

Examinations

- **Examination 1**

Weighting : 60%

Length : 3 hours

Type (open/closed book) : Closed book

Assignment submission

Assignments will be submitted by **paper** submission to **the School Office**. Attach the correct coversheet. Do not email submissions.

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.

Requests for extensions must be made to the unit lecturer at your campus at least two days before the due date. You will be asked to forward original medical certificates in cases of illness, and may be asked to provide other forms of documentation where necessary. A copy of the email or other written communication of an extension must be attached to the assignment submission.

Late assignment

Assignments received after the due date will be subject to a penalty of **5% per day**. **Assignments received later than one week after the due date will not normally be accepted.**

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.