MONASH University
Information Technology

FIT3046
Operating environments

Unit Guide

Semester 1, 2010

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FIT3046 Operating environments - Semester 1, 2010

Chief Examiner:

Associate Professor Manzur Murshed
Head of School
Phone: +61 3 990 26467
Fax: +61 3 990 26842

Lecturer(s) / Leader(s):

Gippsland

Associate Professor Manzur Murshed
Head of School
Phone: +61 3 990 26467
Fax: +61 3 990 26842

Mr Shane Moore
Lecturer
Phone: +61 3 990 26716

South Africa

Mr Neil Manson
Lecturer
Phone: +27 11 950 4035
Fax: +27 11 950 4033

Introduction

Welcome to FIT3046 Operating Environments for Semester 1, 2010. This 6 point unit is core in the Applications Development and Networks major of the Bachelor of Information Technology and Systems (BITS) degree. This unit has been designed to provide you understanding of how various computer operating systems accommodate multiple users and manage various resources and peripherals. It explores many aspects of operating environments with emphasis on key algorithms and their practical applications using cases and real examples.

Unit synopsis

Processes and threads: interprocess communication, scheduling. Deadlock: detection, prevention, avoidance. Memory management: allocation, swapping, virtual memory. Input/output principles and examples: disks, graphical user interfaces, network terminals. File systems: files, directories, disk space management. Security: authentication, cryptography, common attacks, principles of secure system administration. Case studies: Characteristics of major PC operating systems such as Linux and Windows.

Learning outcomes

At the completion of this unit students will:

- know the general purpose and functions of operating systems;
- understand the hardware and software mechanisms used to carry out these functions;
- be familiar with the principal differences between common major operating systems such as Windows and Linux;
- be able to install new operating systems on PC hardware;
- be willing to select operating systems based on their merits rather than their marketing.

Contact hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

For on campus students, workload commitments are:

- two-hour lecture;
- two-hour tutorial/laboratory (requiring advance preparation); and
- 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.

Off-campus students generally do not attend lecture and tutorial sessions, however, you should plan to spend equivalent time working through the relevant resources and participating in discussion groups each week.

Unit relationships

Prerequisites

FIT1001

Prohibitions

FIT2022, GCO2814, GCO3818

Teaching and learning method

Teaching approach

The approach to teaching and learning include a weekly two-hour lecture and a two-hour (tutorial/laboratory). Additionally, each student should spend a minimum of 8 to 12 hours for personal study every week and should allocate up to 5 hours per week in some weeks for use of a computer, including time for newsgroup and discussion.

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	01/03/10	Introduction	1	
2	08/03/10	Processes and Threads	2	
3	15/03/10	Scheduling	2	
4	22/03/10	Interprocess Communications	3	
5	29/03/10	Deadlocks	4	
Mid semester break				
6	12/04/10	Memory Management	5	
7	19/04/10	Memory Management	5	
8	26/04/10	Input/Output	6	
9	03/05/10	File Systems	7	
10	10/05/10	Security	8	
11	17/05/10	Case Study 1: Linux	9	
12	24/05/10	Case Study 2: Windows Vista and Revision	10	
13	31/05/10	No lecture		

*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

Tanenbaum, Andrew, *Modern Operating Systems*, 3rd edition, Prentice-Hall, 2008, ISBN 0-13-600663-9 **(textbook)**.

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

Stallings, William, *Operating Systems: Internals and Design Principles*, 6th edition, Prentice-Hall, 2009, ISBN 0-13-600632-9.

Silberschatz, Galvin and Gagne, *Operating Systems Concepts*, 7th edition, Wiley, 2005, ISBN 0-471-69466-3.

Required software and/or hardware

There is no software requirement.

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:

- A Unit Book containing 10 study guides at MUSO.
- This Unit Information outlining the administrative information for the unit.
- A unit web page at MUSO where lecture slides, weekly tutorial requirements, assignment specifications, sample solutions and supplementary material will be posted.
- Discussion groups at MUSO.

Assessment

Overview

Examination (3 hours): 60%; In-semester assessment: 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 50% then a mark of no greater than 49-N will be recorded for the unit.

The unit is assessed with two assignments and a three hour closed book examination. To pass the unit you must:

- attempt both assignments and the examination
- achieve no less than 40% of the possible average marks in the two assignments
- achieve no less than 40% of the possible marks in the exam
- achieve no less than 50% of possible marks

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 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:
  Students will be required to perform a number of tasks involving both analytical and practical skills from the syllabus covered in Study Guides 1-4.
  Weighting:
  20%
  Due date:

19 April 2010

- **Assignment task 2**

Title:
Assignment 2
Description:
Students will be required to perform a number of tasks involving both analytical and practical skills from the syllabus covered in Study Guides 5-7.
Weighting:
20%
Due date:
17 May 2010

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

- An assignment must be submitted by the *cut-off* date, which is usually seven days after the due date. Any assignment submitted after the cut-off date will not be accepted by the MUSO system and therefore, it will be marked automatically to zero.
- Any assignment submitted after the due date will be penalised by 5% of the full marks for each 24 hours of delay.
- 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