



MONASH University
Information Technology

FIT2070
Operating systems

Unit Guide

Semester 2, 2011

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.

Last updated: 22 Aug 2011

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FIT2070 Operating systems - Semester 2, 2011

This unit covers software organisation of multi-user and multi-tasking computers. The principles of operating systems are covered with reference to the underlying hardware requirements and are illustrated by case studies. Topics include operating system structure and services, multi-programming processes, CPU scheduling, memory management, device management, synchronisation, deadlocks, virtual memory and file systems.

Mode of Delivery

Clayton (Day)

Contact Hours

2 hrs lectures/wk, 3 hr laboratory/fortnight, 1 hr tutorial/fortnight

Workload

You are expected to spend 12 hours per week on various activities including reading, communication with other students and unit lecturers, and preparation for learning tasks and formal assessments.

Unit Relationships

Prohibitions

CSE2302, FIT2022

Prerequisites

([FIT1031](#) or [FIT1001](#)) and ([FIT1008](#) or FIT1015)

Chief Examiner

Professor Bala Srinivasan

Campus Lecturer

Clayton

Professor Bala Srinivasan

Academic Overview

Learning Objectives

At the completion of this unit students will have:

A knowledge and understanding of:

- operating systems as resource managers for CPU context switching, process scheduling and job scheduling;
- memory management and virtual memory systems; I/O device drivers and management;
- file subsystems;
- resource allocation strategies;
- asynchronous and synchronous communication mechanisms and their use in operating systems;
- the philosophy and implementation of interprocess communication and its use in distributed computer systems.

Developed the skills to:

- program OS components, such as job and process schedulers, page replacement algorithms, and file management subsystems, as well as programming interrupt handlers and context switching.

Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:

- a. engage in an internationalised world
- b. exhibit cross-cultural competence
- c. demonstrate ethical values

critical and creative scholars who:

- a. produce innovative solutions to problems
- b. apply research skills to a range of challenges
- c. communicate perceptively and effectively

Assessment Summary

Examination (3 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Practical Assignment	20%	Week 11 Tutorial class
Online Mid-Semester Test	20%	Week 9 Tutorial Class
Examination 1	60%	To be advised

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.

- The lectures define the formal content of the unit, and will be used as the initial point of reference for unit knowledge outcomes. This knowledge will be built upon by the tutorials and laboratories in order to address the higher level objectives relating to skills and application.
- The tutorials are designed to reinforce lecture understandings, and to prepare the student to apply these understandings towards building the skills required to complete the laboratory sessions. Tutorial will provide the opportunity to explore further the concepts discussed in the class as well as look at some specific cases or examples.
- The laboratories are designed to give the student hands-on experience of operating system functions and parameters. Each lab is offered as a partially developed set of program exercises, where demonstrations show the student what is required, and extensions to complete or extend the exercise are required to be completed by the student. This is called the lab work, and it is a required part of the assessment for the unit. Students can work together (if they wish) with the permission from the tutor.

Feedback

Our feedback to You

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

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Test results and feedback
- Solutions to tutes, labs and assignments

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through SETU, Student Evaluation of Teacher and Unit. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, and on student evaluations, see:

<http://www.monash.edu.au/about/monash-directions/directions.html>

<http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html>

Previous Student Evaluations of this unit

If you wish to view how previous students rated this unit, please go to <https://emuapps.monash.edu.au/unitevaluations/index.jsp>

Required Resources

Operating Systems: Internals and Design Principles by William Satallings, 7th Edition, Prentice Hall, 2011.

Recommended Resources

- SSH client to access the server from outside Monash.

Examination material or equipment

None

Unit Schedule

Week	Activities	Assessment
0	Enroll for the lab and tutorial classes	No formal assessment or activities are undertaken in week 0
1	Computer Systems Overview	
2	Operating Ssystems Overview	
3	Process Description and Control	
4	Threads	
5	Concurrency: Mutual Exclusion and Synchronization	
6	Concurrency: Deadlock and Starvation	
7	Memory Management	
8	Virtual Memory	
9	Uniprocessor Scheduling	Online Mid-Semester Test - Tutorial class
10	I/O Management, Disk Scheduling	
11	File Management	Practical Assignment Due in Tutorial class
12	Security, Networking and Summary	
	SWOT VAC	No formal assessment is undertaken SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

*Unit Schedule details will be maintained and communicated to you via your MUSO (Blackboard or Moodle) learning system.

Assessment Requirements

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

Assessment Tasks

Participation

• Assessment task 1

Title:

Practical Assignment

Description:

You are to write a program for an application which requires concurrency.

The objectives of this assignment are to:

- ◆ to understand how to develop concurrent programming;
- ◆ learn a programming language to use (C, Python, etc.); and
- ◆ to demonstrate that you have understood some of the basic principles of OS.

Weighting:

20%

Criteria for assessment:

Completion of the program, together with a reflection on the efficiency of the code.

Due date:

Week 11 Tutorial class

• Assessment task 2

Title:

Online Mid-Semester Test

Description:

A multiple choice paper which will test the understanding of the concepts that are discussed in the class. Questions will be derived from the tutorial classes.

Weighting:

20%

Criteria for assessment:

Correct answers will be discussed in the following tutorial class.

Due date:

Week 9 Tutorial Class

Examinations

- **Examination 1**

Weighting:

60%

Length:

3 hours

Type (open/closed book):

Closed book

Electronic devices allowed in the exam:

None

Assignment submission

It is a University requirement

(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html>) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz).

Extensions and penalties

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>.

Returning assignments

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

Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:

<http://policy.monash.edu.au/policy-bank/academic/education/index.html>

Key educational policies include:

- Plagiarism
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html>)
- Assessment
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-p>)
- Special Consideration
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.h>)
- Grading Scale
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html>)
- Discipline: Student Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html>)
- Academic Calendar and Semesters (<http://www.monash.edu.au/students/key-dates/>);
- Orientation and Transition (<http://www.infotech.monash.edu.au/resources/student/orientation/>);
and
- Academic and Administrative Complaints and Grievances Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy>)
- Codes of Practice for Teaching and Learning
(<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-tea>)

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at www.monash.edu.au/students. The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to <http://www.lib.monash.edu.au> or the library tab in my.monash portal for more information. Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis

- Website: <http://adm.monash.edu/sss/equity-diversity/disability-liaison/index.html>;
- Telephone: 03 9905 5704 to book an appointment with a DLO;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus.