



**MONASH** University  
Information Technology

**FIT2065**  
**Operating systems and the Unix environment**

**Unit Guide**

**Semester 1, 2013**

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.

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# Table of Contents

<b><u>FIT2065 Operating systems and the Unix environment - Semester 1, 2013</u></b> .....	<b>1</b>
<u>Mode of Delivery</u> .....	1
<u>Contact Hours</u> .....	1
<u>Workload requirements</u> .....	1
<u>Unit Relationships</u> .....	1
<u>Prohibitions</u> .....	1
<u>Prerequisites</u> .....	1
<u>Chief Examiner</u> .....	1
<u>Campus Lecturer</u> .....	1
<u>Caulfield</u> .....	2
<u>Tutors</u> .....	2
<u>Caulfield</u> .....	2
<b><u>Academic Overview</u></b> .....	<b>3</b>
<u>Learning Outcomes</u> .....	3
<b><u>Unit Schedule</u></b> .....	<b>4</b>
<u>Assessment Summary</u> .....	4
<u>Teaching Approach</u> .....	5
<b><u>Assessment Requirements</u></b> .....	<b>6</b>
<u>Assessment Policy</u> .....	6
<u>Assessment Tasks</u> .....	6
<u>Participation</u> .....	6
<u>Examinations</u> .....	7
<u>Examination 1</u> .....	8
<u>Learning resources</u> .....	8
<u>Reading list</u> .....	8
<u>Feedback to you</u> .....	8
<u>Extensions and penalties</u> .....	8
<u>Returning assignments</u> .....	8
<u>Assignment submission</u> .....	9
<u>Online submission</u> .....	9
<u>Recommended Resources</u> .....	9
<b><u>Other Information</u></b> .....	<b>10</b>
<u>Policies</u> .....	10
<u>Graduate Attributes Policy</u> .....	10
<u>Student services</u> .....	10
<u>Monash University Library</u> .....	10
<u>Disability Liaison Unit</u> .....	11
<u>Your feedback to Us</u> .....	11
<u>Previous Student Evaluations of this Unit</u> .....	11

# **FIT2065 Operating systems and the Unix environment - Semester 1, 2013**

The main topics covered in this unit include computer systems, operating systems, process management and coordination, memory management including modern implementations of virtual memory, file systems, operating system security, shell variant scripting, regular expressions, Unix utilities, Unix file system, Unix system administration and installation, Unix programming, research and development.

## **Mode of Delivery**

Caulfield (Day)

## **Contact Hours**

2 hrs lectures/wk, 2 hrs laboratories/wk

## **Workload requirements**

There are 4 contact hours for this unit per week:

- 2 hours/lecture
- 2 hours/tutorial

The amount of time students need to allocate to their assignment work and understanding of material will vary from student to student. The university model of a 6 point unit suggests that an average workload would be 12 hours per week including the 4 contact hours of classes, and an additional 8 hours of assigned work and private study.

## **Unit Relationships**

### **Prohibitions**

CPE3007, CPE2008, CSE2208, CSE2391, CSE3001, CSE3208, CSE3391, FIT3041, GCO3813

### **Prerequisites**

One of FIT1001, FIT1031 or CSE1201 or equivalent

### **Chief Examiner**

Professor Bala Srinivasan

### **Campus Lecturer**

## **Caulfield**

**Professor Bala Srinivasan**

## **Tutors**

### **Caulfield**

**Professor Bala Srinivasan**

**Dr Malik Khan**

**Mr Guy Kijthaweesinpoon**

# Academic Overview

## Learning Outcomes

At the completion of this unit students will have -A knowledge and understanding of:

- the role of operating systems in the architecture of computer systems;
- the practical considerations involved in the use of the Unix operating system; specifically memory management, process management and file system implementations;
- the role, utility and syntax of Unix scripting languages;
- considerations and techniques for securing the Unix operating system;
- the responsibilities of and tasks undertaken by Unix system administrators;
- points of contrast and similarity between Unix and other operating systems in widespread use.

Developed attitudes that enable them to:

- appreciate Unix operating system as it is implemented in modern computer systems - Unix system file system, memory management, and networking, and practical functions;
- know how to solve many systems problems using Unix scripting and system facilities;
- appreciate Unix system programming, research and development, and security.

Developed the skills to:

- use important Unix utilities to monitor Unix systems and Unix networks; construct Unix shell scripts to solve many system problems;
- implement security controls in the Unix environment;
- use Unix utilities for data processing, system development and research;
- install and configure the Unix environment;
- use Unix OS for important network servers and tailor their Unix systems to provide important system and network services.

Demonstrated the communication skills necessary to:

- understand the need to balance requirements of users in multiuser operating system environments;
- confidently discuss issues in groups with regard to the implementation of Unix;
- articulate opinions in group environments with respect to the implementation of operating system environments.

## Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Computer systems overview, introduction to Unix and brief history of Unix	
2	Getting a handle on the Unix OS	
3	Shell scripting	
4	Process description and control	
5	Concurrency and Threads	
6	Deadlock and starvation	Assignment 1 due
7	Memory management	
8	File management	Assignment 2 due
9	Unix utilities	
10	Unix security	Unit Test in the tutorial class
11	System administration	
12	Review	Assignment 3 due
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: <a href="http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html">http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html</a>

\*Unit Schedule details will be maintained and communicated to you via your learning system.

## Assessment Summary

Examination (2 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Assignment 1 - Shell Scripting	10%	Week 6
Assignment 2 - Concurrent Programming	10%	Week 8
Unit Test	10%	Week 10 tutorial class
Assignment 3 - Written Assignment	10%	Week 12
Examination 1	60%	To be advised

Unit Schedule

## **Teaching Approach**

### **Lecture and tutorials or problem classes**

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

# Assessment Requirements

## Assessment Policy

Faculty Policy - Unit Assessment Hurdles

(<http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu>)

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at

<http://lib.monash.edu/tutorials/citing/>

## Assessment Tasks

### Participation

#### • Assessment task 1

**Title:**

Assignment 1 - Shell Scripting

**Description:**

An individual assessment where students have to develop a working shell script for a practical problem. This is purely a programming exercise. The specification of the assignment will be provided in Week 3.

**Weighting:**

10%

**Criteria for assessment:**

The program will be assessed on the following:

- ◆ Functionality;
- ◆ Efficiency;
- ◆ Correctness;
- ◆ Generality of the software;
- ◆ Error conditions, error trapping and error messages; and
- ◆ Readability and modularity of the code.

**Due date:**

Week 6

**Remarks:**

Submission of soft copy through file transfer on the unit Moodle web site.

#### • Assessment task 2

**Title:**

Assignment 2 - Concurrent Programming

**Description:**

An individual assessment where students have to develop a working program for a practical problem using concurrency concepts learned in this unit. This is purely a programming exercise and you are free to choose any programming language for implementation. However, C language will be used for the examples in the labs.

**Weighting:**

10%

**Criteria for assessment:**

The program will be assessed on the following:



## Assessment Requirements

- ◆ Functionality;
- ◆ Efficiency;
- ◆ Correctness;
- ◆ Error conditions, error trapping and error messages; and
- ◆ Readability and modularity of the code.

**Due date:**

Week 8

**Remarks:**

Submission of soft copy through file transfer on the unit Moodle web site.

### • Assessment task 3

**Title:**

Unit Test

**Description:**

The unit test will be conducted in the Week 10 tutorial class as a combination multiple choice written test and a scripting exercise. Since it is conducted during the tutorial sessions, each tutorial class will have a different set of multiple choice and scripting questions.

**Weighting:**

10%

**Criteria for assessment:**

- ◆ Correct answers to multiple choice questions (no negative marks for incorrect answers).
- ◆ The scripting part will be assessed based on the correctness of the script.

**Due date:**

Week 10 tutorial class

### • Assessment task 4

**Title:**

Assignment 3 - Written Assignment

**Description:**

A written assignment exploring various principles of operating systems that are covered in the lectures. This assignment is a pre-cursor for the preparation of the final examination.

**Weighting:**

10%

**Criteria for assessment:**

- ◆ Correct answers to the questions.
- ◆ Explanation or reasoning of behaviours.

**Due date:**

Week 12

**Remarks:**

Submission of soft copy through file transfer on the unit Moodle web site.

## Examinations

## Assessment Requirements

### • Examination 1

**Weighting:**

60%

**Length:**

2 hours

**Type (open/closed book):**

Closed book

**Electronic devices allowed in the exam:**

None

## Learning resources

### Reading list

Following are the reference books for this unit. A number of web based reference material will be provided on the unit's moodle site.

- William Stallings, "Operating Systems: Internals and Design Principles", 7th Ed.
- Silberschatz, Galvin and Gagne, "Operating Systems Concepts", John Wiley & Sons, Inc. 7th Ed.
- Simson Garfinkel and Gene Spafford, "Practical Unix & Internet Security", O'Reilly & Associates, Inc. Latest Ed.

Monash Library Unit Reading List

<http://readinglists.lib.monash.edu/index.html>

### 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
- Interviews
- Test results and feedback
- Solutions to tutes, labs and assignments

### 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.

## **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).

## **Online submission**

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

## **Recommended Resources**

Access to Linux or Unix off-campus would be useful, but is not required.

## 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:

[www.policy.monash.edu.au/policy-bank/academic/education/index.html](http://www.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 in Coursework Programs;  
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po>
- Special Consideration;  
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht>
- 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/dates/>
- Orientation and Transition; <http://intranet.monash.edu.au/infotech/resources/students/orientation/>
- Academic and Administrative Complaints and Grievances Policy;  
<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h>
- Code of Practice for Teaching and Learning;  
<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teac>

### Graduate Attributes Policy

<http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.h>

### 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 <http://www.monash.edu.au/students>. For Sunway see <http://www.monash.edu.my/Student-services>, and for South Africa see <http://www.monash.ac.za/current/>.

### Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to [www.lib.monash.edu.au](http://www.lib.monash.edu.au) or the library tab in [my.monash](#) portal for more information. At Sunway, visit the Library and Learning Commons at <http://www.lib.monash.edu.my/>. At South Africa visit <http://www.lib.monash.ac.za/>.

## Disability Liaison Unit

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://www.monash.edu/equity-diversity/disability/index.html> Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway Email: [dlu@monash.edu](mailto:dlu@monash.edu) Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

## 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 the Student Evaluation of Teaching and Units (SETU) survey. 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, see:

[www.monash.edu.au/about/monash-directions](http://www.monash.edu.au/about/monash-directions) and on student evaluations, see: [www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html](http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html)

## Previous Student Evaluations of this Unit

Based on feedback:

- The practical component will be complemented with theoretical questions in the tutorials;
- Supporting theory will be added as part of the lectures; and
- The non-assessable weekly quizzes will continue.

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