



**MONASH** University  
Information Technology

**FIT3042**  
**System tools and programming languages**

**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.

*Last updated: 04 Mar 2013*

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# **FIT3042 System tools and programming languages - Semester 1, 2013**

This unit provides students with an introduction to UNIX tools for managing processes; searching, editing and modifying files and data streams; and command interpreters and shell scripts. In addition, students will learn about a typical system call interface and its use for systems programming in a language like C.

## **Mode of Delivery**

Clayton (Day)

## **Contact Hours**

2 hrs lectures/wk, 2 hrs laboratories/wk

## **Workload requirements**

Students will be expected to spend a total of 12 hours per week on this unit as follows:

For on campus students, workload commitments are:

- Two hours of lectures per week and
- two hours of laboratory work per week (requiring advance preparation)
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.

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**

### **Prohibitions**

CSE2391, CSE3391

### **Prerequisites**

One of [FIT1008](#), FIT1015, CSE1303

## **Chief Examiner**

**Dr Robert Merkel**

## **Campus Lecturer**

**Clayton**

**Robert Merkel**

# Academic Overview

## Learning Outcomes

At the completion of this unit students will have:

- knowledge of the Unix philosophy at shell and system call levels;
- comprehension of Unix shells and the POSIX standard;
- knowledge of the variety of tools available and understanding of a core selection of them;
- knowledge of the Unix system call interface and associated systems programming;
- programming skills at the Unix shell level using pipelines and shell scripts applying a number of tools;
- programming skills at the system call level for systems programming.

## Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Unit Introduction	Laboratory Exercises are assessed at the end of each lab session
2	Introduction to C, Make	
3	C programming: Pointers & Data structures	
4	Unix C Programming	
5	Inter-process communication, third-party libraries	Assignment 1 handed out
6	Introduction to shell programming	
7	Shell filters	
8	Shell programming	Assignment 1 due Monday 29 April 2013
9	Regular expressions	
10	Perl 1: scalars & arrays	Assignment 2 handed out
11	Perl 2: Perl regexes	
12	Perl 3: Perl modules, Perl 6.	Assignment 2 due Friday 31 May 2013
	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 (3 hours): 50%; In-semester assessment: 50%

Assessment Task	Value	Due Date
Assignment 1	20%	Monday 29 April 2013
Assignment 2	20%	Friday 31 May 2013
Laboratory Exercises	10%	At the end of each lab session
Examination 1	50%	To be advised

## Teaching Approach

Lecture and tutorials or problem classes

## Unit Schedule

The teaching and learning approach provides facilitated learning, practical exploration and peer learning, equipping you with the ability to apply skills upon completion.

# 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

Students are expected to attend at least 8 of the 11 labs.

#### • Assessment task 1

**Title:**

Assignment 1

**Description:**

C/Unix programming assignment

**Weighting:**

20%

**Criteria for assessment:**

- ◆ Correctness
- ◆ Efficiency
- ◆ Quality of solution
- ◆ Documentation

**Due date:**

Monday 29 April 2013

#### • Assessment task 2

**Title:**

Assignment 2

**Description:**

Shell/Perl programming assignment

**Weighting:**

20%

**Criteria for assessment:**

- ◆ Correctness
- ◆ Efficiency
- ◆ Quality of solution
- ◆ Documentation

**Due date:**

Friday 31 May 2013



## Assessment Requirements

### • Assessment task 3

**Title:**

Laboratory Exercises

**Description:**

Exercises held during laboratory sessions.

**Weighting:**

10%

**Criteria for assessment:**

Lab exercises are assessed during the scheduled laboratory session. Marks are awarded for successful completion of the laboratory exercises.

**Due date:**

At the end of each lab session

## Examinations

### • Examination 1

**Weighting:**

50%

**Length:**

3 hours

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

Open book

**Electronic devices allowed in the exam:**

None

## Learning resources

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
- Test results and feedback

## 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.

## Resubmission of assignments

Multiple assignment submission may be enabled in Moodle. However, only the last version will be assessed. Resubmission after the due date will only be permitted after special consideration is granted through the regular faculty processes, or, occasionally, in other exceptional circumstances with lecturer permission. Penalties may apply in such circumstances.

## Referencing requirements

Any written work must use appropriate referencing methods, according to the Library Guides for citing and referencing <http://guides.lib.monash.edu/content.php?pid=88267&sid=656564>

Generally, code submitted in your assignments should be your own original work. However, where code uses ideas from specific sources, they should be cited in comments.

Specific assignments may provide additional direction on referencing and reuse of third-party code.

## 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

Most assignments will be submitted via the Moodle electronic learning system, which is accessed through the subject web page. The assignment coversheets will also be made available through Moodle.

## Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

Students will be provided with a Linux-based virtual machine environment. The virtual machine will be made available in labs and can also be installed, using free software, on any PC.

As a virtual machine, it will run under the VMWare Player software (freely downloadable) as any other application under Windows, Mac, or another version of Linux).

Students may choose to use another Linux distribution if they wish, however no support will be provided for this.

## **Recommended text(s)**

Mark G. Sobell. (2009). *A Practical Guide to Linux Commands, Editors, and Shell Programming*. (2nd Edition) Prentice Hall (ISBN: 978-0131367364).

Brian W. Kernighan and Dennis M. Ritchie. (1988). *The C Programming Language*. (2nd Edition) Prentice Hall (ISBN: 978-0131103627).

Michael Kerrisk. (2010). *The Linux Programming Interface*. (1st Edition) No Starch Press (ISBN: 978-159372-200-3).

Larry Wall, Tom Christiansen, Jon Orwant. (2000). *Programming Perl*. (3rd Edition) O'Reilly Media (ISBN: 978-0-596-00027-1).

K. N. King. (2008). *C Programming: A Modern Approach*. (2nd Edition) W. W. Norton & Company (ISBN: 978-0-393-97950-3).

## **Field trips**

No field trips.

## **Additional subject costs**

No additional costs.

## **Examination material or equipment**

Exam details, including permitted equipment, will be announced on the unit website during the semester.

## 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

The exam format will more closely reflect the language-oriented content of the unit.

Material relating to Makefiles has been expanded. Lab sheets have been restructured.

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