OVERVIEW

Introduction
The unit studies the internal structures of Linux and Unix systems with an emphasis on system calls to achieve the following goals:

1. To study the design of a software system that has shown remarkable software quality attributes
2. To learn and understand the design of a concurrent, multi-user and secure system
3. To learn how application programs can interact with the underlying operating systems
4. To have a deeper understanding of the issues related to the operating systems.

Prior Learning
A good knowledge of the programming language C is assumed. Students who do not have experience with C programming will need to be willing to learn the language and program in it at the level of an experienced programmer.

Learning Outcomes
On successful completion of this unit, you will be able to:

1. Understand and explain the functions of main components of Linux operating system
2. Have an appreciation of the reasons that have made Unix/Linux a software wonder
3. Be able to write advanced applications that interact with the operating systems in sophisticated ways
Unit Content

1. Introduction to Unix/Linux kernel
2. Kernel services
3. Linux processes -- threads, signals
4. File systems -- cache management
5. Interprocess communication
6. Devices and device drivers
7. Terminal management
8. Introduction to networking with Linux

For more information see the section titled 'Content' on the unit website.

Generic Skills

The university has defined a set of generic graduate attributes expected in its graduates. [http://www.utas.edu.au/policy/subject.html#graduates](http://www.utas.edu.au/policy/subject.html#graduates) Your course is designed to enable you to develop generic skills that are valued in, and expected of, graduates. These are skills that you will need to develop over time. Hence you are encouraged to look for opportunities, as you study each unit, to reflect on and improve these skills.

LEARNING AND TEACHING

Approach to Learning

You are expected to spend about 130 hrs studying in this unit - this includes attendance at scheduled teaching sessions. (For a 13 week semester this is, on average, 10 hr/wk.) This is the amount of study time that the ‘typical’ student will need to reach the level of competence and understanding required to fulfil the unit objectives.

You are expected to:

- attend all scheduled lectures, unless otherwise notified by the unit coordinator
- prepare for, and actively participate in lectures
- complete the assigned learning tasks
- review what has been learnt
- complete assessment items and submit them on time
- access and be familiar with the information and resources available on the unit website
- seek help from teaching staff if you have any questions or difficulties in studying this unit

Being an honours level unit, it is expected that the students will do independent, self-directed study outside the classroom. A commitment to write sophisticated programs without help from tutor/lecturer on basic programming issues is necessary.

You are encouraged to read the university’s Code of Conduct for Teaching and Learning. Part A describes the 'Responsibility of the University to Students' and part B describes the 'Responsibilities of Students to the University'. [http://www.utas.edu.au/tl/policies/codes.html](http://www.utas.edu.au/tl/policies/codes.html)

Schedule

See the 'Schedule' section on the unit website.

Lecures will be scheduled in weeks 2 to 6 (inclusive). Presentations by studnets will be scheduled in weeks 8 to 10. Note there are 4 hours of lecture/presentation time in each of the above weeks.

To make available time for graduating studnets' projects/thesis the final examinaion is scheduled in week 12.

Teaching and Support Staff

Teaching Staff

Unit Coordinator:

Vishv Malhotra
E-Mail: Vishv.Malhotra@utas.edu.au
Phone: (03) 6226 2944
Room: 456, Sandy Bay Campus, Hobart

Lecturing Staff

Sandy Bay Campus, Hobart: Vishv Malhotra
Newnham Campus, Launceston: Vishv Malhotra

School Help Desk

Contact the School Help Desk if you have any queries or problems with accessing, using, or printing from the computers in the School of Computing labs.

- Hobart: the Help Desk is located near the School's reception desk and is open from 10am - 4pm Monday–Friday. The phone number is 6226 2960.
- Launceston: the Help Desk is located near the entrance to the computing labs and is open in the morning from 10am - 12pm, and in the afternoon from 2pm - 4:30pm, Monday-Thursday. On Fridays it is open from 10am - 12pm in the morning and 2pm - 4pm in the
afternoon. The phone number is 6324 3447.
- **Burnie:** the computer labs at the NWC are maintained by ITS. Please contact the University Help Desk for assistance. The 6 Macs are maintained by the School of Computing. If you have a query or problem that is specific to the School of Computing please phone the School of Computing Help Desk in Launceston.

**University Services and Support**

The University has staff available to assist you, such as the:

- Learning Development Advisor
- Student Counselor
- Careers Advisor
- Disability Officer

For more information and contact details see the Services and Support section on the University 'Current Students' web page. [http://www.utas.edu.au/students/](http://www.utas.edu.au/students/)

**Resources**

**Unit Website**

The unit website contains unit information and resources. Students are expected to print their lecture notes from the unit website. Lecture notes for each week will be available on the website at the start of the corresponding week. In addition, electronic versions of some books are placed on this site. Students should access them as required.

**Prescribed Text**


A number of other books will be listed in the lecture notes for week 02.

**Readings**

The University libraries have good stock of books related to the unit. Extensive online resources are also accessible over the net in this area.

**Software**

The software that you will need to access the unit website and to study this unit, including general purpose software such as word processors, is provided on the computers in the School's computing labs. If you intend to use software on other computers please check that the versions are compatible.

Programs and other executable code, where necessary, will be made available in the 'Resources' section of the unit website (details will be specified later).

**Computing Facilities**

The School has PC labs (Windows XP), Mac labs (Mac OS-X 10.3), and Networking labs at the Newnham and Sandy Bay campuses. It also maintains 6 Macs (Mac OS-X 10.3) at the NW Centre. Unix accounts can be accessed from all Macs and PCs.

If you have not used these facilities before please contact the School Help Desk to organise your account details. If you would like to access the facilities at the Newnham and Sandy Bay campuses after hours please contact the School Help Desk.

Please contact the School Help Desk if you have difficulty accessing or using these facilities.

Depending on the number of students enrolled on each campus a few dedicated machines may be provided with Linux OS. Students with allocated machines may find it convenient to install Linux on their computers.

**Use of Facilities**

Use of computing facilities provided by the School is subject to the School's Ethics Guidelines - [http://www.comp.utas.edu.au/app/ethics.jsp](http://www.comp.utas.edu.au/app/ethics.jsp). Copies of the guidelines are also available in all School labs. The School's facilities may only be used for study-related purposes, and may not be used for personal gain. The playing of games is strictly prohibited in all labs at all times. Before being granted access to the School's facilities, you will be required to sign a declaration that you have read and understand these guidelines, and that you will abide by them. Disciplinary action may be taken against students who violate the guidelines.

**Occupational**

The university is committed to providing a safe and secure teaching and learning environment.
ASSESSMENT

Item 1

Title: Assignment 1
Type: In-Semester - individual project
Weighting: 30%
Due: 3:00pm, 15 September 2005 (Thursday)

Item 2

Title: Assignment 2
Type: In-Semester - individual project
Weighting: 30%
Due: Presentation as agreed

Half hour presentation should be scheduled in weeks 8-10. Slots will be allocated on first-come-first-serve basis after week 2. Each 2-hour scheduled teaching session will have 3 presentations.

Item 3

Title: 6-hr take home exam
Type: In-Semester - test
Weighting: 40%
Due: 03 Oct 2005 (Monday) 10am-4pm

Notice that the exam is scheduled before the university examination period. In a take home examination, the lecturer relies on the honesty of the honours students and trusts they will not contact another human, in any form, for solution to any exam question.

See the 'Assessment' section in unit website for more detailed information about assessment items.

In-Semester Assessment

Unless specifically stated in the specification of the assessment item provided on the unit website, it is required that:

- work submitted by a student is the work of that student alone OR
- where the assessment item is to be completed by a group of students, the work submitted by the group of students is the work of that group of students alone.

Plagiarism

Plagiarism is a form of cheating. It is taking and using someone else's thoughts, writings or inventions and representing them as your own, for example:

- using an author's words without putting them in quotation marks and citing the source;
- using an author's ideas without proper acknowledgment and citation; or
- copying another student's work.

If you have any doubts about how to refer to the work of others in your assignments, please consult your lecturer or tutor for relevant referencing guidelines, and the academic integrity resources on the web at http://www.utas.edu.au/tl/supporting/academicintegrity/index.html.

The intentional copying of someone else's work as one's own is a serious offence punishable by penalties that may range from a fine or deduction/cancellation of marks and, in the most serious of cases, to exclusion from a unit, a course or the University. Details of penalties that can be imposed are available in the Ordinance of Student Discipline – Part 3 Academic Misconduct, see http://www.utas.edu.au/policy/subject.html#students.

The University reserves the right to submit assignments to plagiarism detection software, and might then retain a copy of the assignment on its database for the purpose of future plagiarism checking.

Referencing

The university document on plagiarism contains information about referencing the work or ideas of others. (See http://www.utas.edu.au/plagiarism/) The preferred text referencing systems for
the School is the Harvard system (also referred to as the author-date system).

**Submissions**

The details of the submission method (paper, electronic or other) for each assignment will be supplied in a separate assignment specification sheet. All in-semester assignment submissions (including electronic submissions) are to include an Assignment Cover Sheet which includes a statement confirming that the submission is your own work. If this undertaking is not signed, the assignment will not be marked. The Assignment Cover Sheet is available from the School Help Desk in Launceston and Hobart, and on the School's web site [http://www.comp.utas.edu.au/app/studyresources.jsp](http://www.comp.utas.edu.au/app/studyresources.jsp).

**Extensions and Penalties**

Assessment items will not be accepted after the due date except under the conditions stated in the school policy on late assessment. [http://www.comp.utas.edu.au/app/late_assess.jsp](http://www.comp.utas.edu.au/app/late_assess.jsp)

**Final Grade**

Passing grades will be awarded based on the AVCC guidelines:

- PP at least 50% of the overall mark but less than 60%
- CR at least 60% of the overall mark but less than 70%
- DN at least 70% of the overall mark but less than 80%
- HD at least 80% of the overall mark

The maximum mark awarded to a student who fails the unit will be 44.

For more information, including other grades such as Supplementary and Terminating grades, see the School of Computing's guidelines for assessment - available at: [http://www.comp.utas.edu.au/app/assess.jsp](http://www.comp.utas.edu.au/app/assess.jsp)