Unit Outline: KXT103 Introduction to Systems

Semester 1, 2007

North West Centre, Burnie
Sandy Bay Campus, Hobart
Newnham Campus, Launceston

Prerequisites
None
Corequisites
None
Unit Weight
12.5% of one academic year
Unit Coordinator
Jacky Hartnett and Dr. Daniel Rolf
Lecturing Staff
Newnham Campus, Launceston: Jacky Hartnett and Dr. Daniel Rolf
Sandy Bay Campus, Hobart: Jacky Hartnett and Dr. Daniel Rolf
Assisting Lecturers:
Dr. Dan Rolf
E-Mail: Daniel.Rolf@utas.edu.au
Phone: (03) 6324 3450
Room: V169, Launceston

Dr. Ian Lewis
E-Mail: I.J.Lewis@utas.edu.au
Phone: (03) 6226 2952
Room: 465, Hobart

Dr. Shuxiang Xu
E-Mail: Shuxiang.Xu@utas.edu.au
Phone: (03) 6324 3416
Room: V173, Launceston

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

Scheduled Teaching Sessions
Lectures: 3 hr/wk
Tutorials: 1 hr/wk (from week 2)
The Unit Timetable can be accessed from the Study Resources section of the School website.
Lectures for North West Centre students will be via video conference. For information about videoconferencing at UTAS and how to participate effectively, see the Students' guide to Videoconferencing available at: http://www.utas.edu.au/itr/videoconf/StudentGuide2006.pdf or follow the Service desk link from the Current Students homepage>Videoconferencing.

Unit Website
The unit website is accessed from http://www.utas.edu.au/coursesonline/. You will need to use your university email pop account username and password to log on to the WebCT system. Once authenticated by the system your personalised MyWebCT area will be displayed. It contains links to the websites that you have permission to access - including the website for this unit.
This unit is Web Dependent: content & communication. This means that you will need to use the Web for this unit. The unit website contains unit information and resources.
If you are not able to access the unit website, please contact the University IT help desk:
Entrance Level, Morris Miller Library, Sandy Bay Campus;
Entrance Level, Launceston Campus Library, Newnham Campus.
Telephone: 6226 1818 and 1300 304 903.
The 1300 number is a local call from within Tas, with the exception of mobiles.
Email: servicedesk@utas.edu.au
Website: http://www.utas.edu.au/servicedesk/student/index.html

University Website
Information and Resources for 'Current Students' are available on the university website at:
http://www.utas.edu.au/students/

Provider
School of Computing - Faculty of Science, Engineering, and Technology.
http://www.comp.utas.edu.au
Introduction

This unit begins by introducing students to the structure and function of digital computers, reviewing their typical major components and the interconnection and interaction of those components. The unit builds on this by introducing fundamental concepts of operating systems, networking and security leading up to a simple, complete model of secure, end-to-end, data transmission through the Internet. At the end of the unit students will have been given a basic grounding in how application data is handled by communicating networked computers.

Learning Outcomes

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

1. Demonstrate an understanding of different number representations (binary, octal, and hexadecimal) and binary logic
2. Demonstrate an understanding of computer organisation and architecture
3. Demonstrate knowledge of historical and current developments in computers and likely future trends
4. Understand the functions of the major components of a digital computer
5. Demonstrate an understanding of computer operating system components
6. Demonstrate an understanding of the UNIX operating system
7. Demonstrate a basic understanding of the TCP/IP and OSI data communication models
8. Demonstrate a basic understanding of data communication over the Internet
9. Demonstrate an understanding of the configuration of a desk top computer as part of a small local Area Network
10. Demonstrate an understanding of the goals of computer security
11. Demonstrate an understanding of the essential properties of hashing algorithms and how these can be used to achieve security goals
12. Demonstrate an understanding of the essential properties of symmetric key algorithms and how these can be used to achieve security goals
13. Demonstrate an understanding of the essential properties of asymmetric key algorithms and how these can be used to achieve security goals

Unit Content

The weekly three hours of lectures will present materials from several on-line resources according to the following schedule:

Weeks 1-3: Introduction to Computer Architecture: Number representations and Logic, computer components and structure, CPU components and function, introduction to input/output (I/O)

Weeks 4-6: Computer Operating Systems (OS): OS overview and components, UNIX overview, UNIX shell, UNIX file system.

Weeks 7-10: Computer Networking: the important concepts of data communications in local and wide area networks with a particular focus on the Internet.

Weeks 11-12: Computer and Network Security: the goals of computer security, essential properties of cryptographic algorithms and examples of using these to achieve network security goals

Week 13: Course review and exam preparation

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. 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 and tutorials, unless otherwise notified by the unit coordinator
- prepare for, and actively participate in lectures and tutorials
- 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

Each week's lectures will be supplemented by readings available on the world wide web. The URLs for these readings will, typically, be found in the lecture slides. The readings are an integral part of the unit and should be viewed as compulsory material.

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'.

Schedule

See the 'Schedule' section on the unit website.
Teaching and Support Staff

Teaching Staff

Unit Coordinator:

Jacky Hartnett and Dr. Daniel Rolf  
E-Mail: J.Hartnett@utas.edu.au  
Phone: (03) 6324 3392  
Room: V120, Newnham Campus, Launceston

Lecturing Staff

Newnham Campus, Launceston: Jacky Hartnett and Dr. Daniel Rolf  
Sandy Bay Campus, Hobart: Jacky Hartnett and Dr. Daniel Rolf  
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Room: 456, Hobart

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.

Prescribed Text


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
Computing Facilities

The School has PC labs (Windows XP), Mac labs (Mac OS-X 10.4), and Networking labs at the Newnham and Sandy Bay campuses. It also maintains 6 Macs (Mac OS-X 10.4) 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.

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. 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 Health and Safety

The university is committed to providing a safe and secure teaching and learning environment. For more information see http://www.admin.utas.edu.au/hr/ohs/pol_proc/

ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment Items</th>
<th>Item 1</th>
<th>Title: Computer Architecture Tests 1, 2 &amp; 3</th>
<th>Type: In-Semester - test</th>
<th>Weighting: 10%</th>
<th>Due: To be advised by lecturer</th>
</tr>
</thead>
</table>

The WebCT tests for this unit are multiple choice tests that you attempt in your own time (i.e., not in tutorial time). Each test is made available on the system for a limited time only (typically one week) so make sure you leave yourself plenty of time to do them. You will have a maximum of 2 attempts at each test (whilst the test is enabled on WebCT) and the system will take your best score as your final mark for that test. Your lecturer will inform you when a WebCT test is ready to be attempted.

<table>
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<tr>
<th>Item 2</th>
<th>Title: Operating Systems Test 1</th>
<th>Type: In-Semester - test</th>
<th>Weighting: 10%</th>
<th>Due: Week 7</th>
</tr>
</thead>
</table>

The WebCT tests for this unit are multiple choice tests that you attempt in your own time (i.e., not in tutorial time). Each test is made available on the system for a limited time only (typically one week) so make sure you leave yourself plenty of time to do them. You will have a maximum of 2 attempts at each test (whilst the test is enabled on WebCT) and the system will take your best score as your final mark for that test. Your lecturer will inform you when a WebCT test is ready to be attempted.

<table>
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<tr>
<th>Item 3</th>
<th>Title: Networks &amp; Security Test 1</th>
<th>Type: In-Semester - test</th>
<th>Weighting: 10%</th>
<th>Due: Week 14</th>
</tr>
</thead>
</table>

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<table>
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<tr>
<th>Item 4</th>
<th>Title: 3 hr examination</th>
<th>Type: Formal Examination</th>
<th>Weighting: 70%</th>
</tr>
</thead>
</table>
Due: University Examination Period

The examination for this unit lasts 3 hours and is closed book.

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.

Extensions

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

Formal Examination

The formal examination is conducted by the University Registrar. The 'Current Students' section on the university website contains information about the conduct of, and timetable for, formal examinations.

Final Grade

Overall assessment will be based on the student's performance throughout the semester as well as in a formal examination. In order to achieve a pass (or better) result, a student must obtain:

1. at least 45% of the total mark for in-semester assessment items
2. at least 45% of the mark for the formal examination
3. at least 50% of the overall mark

In order to comply with the benchmarks set by the Faculty of Science, Engineering & Technology for distribution of grades in units, both the in-semester and examination marks that students obtain may be adjusted either upwards or downwards. See http://fcms.its.utas.edu.au/scieng/scieng/policies.asp for details of the Faculty Assessment Guidelines.

It should be noted that in order to comply with the Faculty benchmarks both in-semester and examination marks may be adjusted either down or up. These benchmarks can be found as part of the Faculty Assessment Guidelines on the Faculty Policies web page at:
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: