Overview

Introduction
Provides both the theoretical basis and practical experiences of the contemporary concurrent and distributed systems. The three main strands of the unit are analysis techniques, concurrent programming practices and techniques for building distributed systems. Analysis techniques: formal methods for expressing and establishing the correctness and other properties of the sequential and concurrent systems. Concurrent systems: threads, threads synchronisation, and patterns for interference-free execution of concurrent threads; transactions. Distributed systems: client-server and other models of distributed systems, modern inter-object interaction paradigms -- RMI, Servlets and CORBA. Security issues arising from the distribution.

Prior Learning
Students with good familiarity with the mathematical practices and aptitude for algorithms will find the unit more interesting. Others students may need to work regularly and consistently.

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

1. Formally express and infer correctness properties of simple sequential/concurrent software systems.
2. Develop concurrent systems and understand the nature of safety and liveness concerns in the concurrent systems.
3. Use Java concurrent and RMI based programming facilities
4. Will be aware of common modern technologies for developing distributed/concurrent systems.

### Unit Content

The three main strands of the unit are analysis techniques, concurrent programming practices and techniques for building distributed systems.

**Analysis techniques**: formal methods for expressing and establishing the correctness and other properties of the sequential and concurrent systems.

**Concurrent systems**: threads, threads synchronisation, and patterns for interference-free execution of concurrent threads.

**Distributed systems**: client-server and other models of distributed systems, modern inter-object interaction paradigms – RMI, Servlets and CORBA.

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 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

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/utl/policies/codes.html](http://www.utas.edu.au/utl/policies/codes.html)

#### Schedule

See the 'Schedule' section on the unit website.

#### 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  
Lecturer will visit Launceston 2 times during the semester and once in the SWOT period to discuss and help students.

**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
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. Lecturing material/notes will be provided only for material not covered from the textbook. Ready access to the books from which the course material has been selected will be useful resource for further learning.

Prescribed Text

None

Readings

List of recommended books will be provided in the class each week.

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.

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](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/](http://www.admin.utas.edu.au/hr/ohs/pol_proc/)

ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment Items</th>
<th>Item 1</th>
<th>Title: Assignment 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type: In-Semester - group assignment</td>
<td>Weighting: 30%</td>
</tr>
<tr>
<td></td>
<td>Due: 25 May 2007 Friday 3PM</td>
<td></td>
</tr>
</tbody>
</table>

Groups of 2 students or individually. Students submitting assignment in groups of 3 students will be scaled to 90% of the scored marks. Only one submission must be made by a group.

<table>
<thead>
<tr>
<th>Item 2</th>
<th>Title: 3-hour examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>Formal Examination</td>
</tr>
</tbody>
</table>
Weighting: 70%
Due: University Examination Period
Closed book. Please note the change in the arrangement used in 2006.

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.

For each group submission only one copy must be submitted and clearly declared by signing the standard submission cover sheet.

Note that a student can not complete both assignments as group assignment. Where a student has submitted both assignments as group assignments, total internal score will be adjusted by reducing the lower score to one-half.

Attendance in tutorials is not mandatory but it is essential for best learning outcomes that you attend all tutorial and/or lab sessions.

**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](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](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/](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**

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)

**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-semster 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](http://fcms.its.utas.edu.au/scieng/scieng/policies.asp) for details of the Faculty Assessment Guidelines.

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)