Unit Outline: KXC154 Software Process

March - July 2007
Hangzhou, China

Prerequisites
KXC151
Corequisites
None

Unit Weight
12.5% of one academic year

Unit Coordinator
Dr. Julian Dermoudy

Lecturing Staff
Dr. Julian Dermoudy
Ms. Zhang Minxia

Scheduled Teaching Sessions
Lectures: 3 hr/wk
Tutorials: 1 hr/wk (from week 2)

Unit Website
The unit website is accessed from http://www.utas.edu.au/coursesonline/. You will need to use your University of Tasmania 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. 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 technical staff at ZUT.

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

Provider

OVERVIEW

Introduction
This unit extends the students' knowledge and experience of programming, and introduces them to the consideration and experience of the software engineering processes necessary for the construction of software systems of high quality. Programming topics include: references, allocation and deallocation of memory, self-referential data structures, classes and objects, class instantiation, object based programming, abstract data types, introduction to algorithm complexity. Software Engineering topics include: requirements analysis, functional specification, software design, programming techniques and tools, software development life-cycles, an introduction to software version control, systematic approach to testing, and period planning.

Warning on Over-confidence
Some students who have done a considerable amount of home or school computing may think that they are already expert computer programmers. This is extremely unlikely, as most self-taught or uncorrected programmers have picked up bad habits which are inappropriate in professional programming, and may have major gaps in their understanding of concepts. Please bear in mind that practising computing at a professional level is very different from practising it as a hobby. Experience has shown that very few students who have studied computing at school are so good that they can treat programming units lightly.

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

1. Program using recursive and non-recursive data structures
2. Understand associated algorithms and their complexity
3. Design, and understand the advantages of, abstract data types
4. Apply time management principles to software production
5. Understand the software development process and its common models
6. Understand how the models provide a framework for costing, staffing, scheduling, controlling, and maintaining the quality of software products

Unit Content
Data Structures and Algorithms:

- arrays, lists, queues, stacks, trees
abstract data types
- classes, objects, instantiation
- introduction to algorithm complexity

Fundamentals of Software Engineering:
- analysis, functional specification, software design, programming
- techniques and tools
- software development life cycles
- software version control
- systematic approach to testing

Personal Software Process:
- tracking, prioritisation and management of time
- period planning, product planning

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.

**Knowledge**

- Apply technical and information skills
- Use a wide range of academic skills including analysis and synthesis

**Communication Skills**

- Access, organise and present information

**Problem Solving Skills**

- Conceptualise problems and formulate a range of solutions
- Find, acquire, evaluate, manage and use relevant information

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

**Schedule**

See the 'Schedule' section on the unit website.

**Teaching and Support Staff**

**Teaching Staff**

**Unit Coordinator:**

Dr. Julian Dermoudy  
E-Mail: Julian.Dermoudy@utas.edu.au

**Lecturing Staff**

Dr. Julian Dermoudy  
Ms. Zhang Minxia

**School Help Desk**
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/

Resources

Unit Website

The unit website contains unit information and resources.

Prescribed Text


Readings


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 computing labs. If you intend to use software on other computers please check that the versions are compatible.

The programming can be completed using any Java editor and compiler. Programs will be distributed which have been developed for Xinox Software's JCreator Lite Edition (LE). This is freeware and is available from http://www.jcreator.com. If you have a personal computer and wish to install JCreator please feel free.

ASSESSMENT

| Assessment Items | Item 1 | Title: Data Structures Assignment 1  
| Type: In-Semester - individual assignment  
| Weighting: 10%  
| Due: End of Week 7 |

| Item 2 | Title: Data Structures Assignment 2  
| Type: In-Semester - individual assignment  
| Weighting: 10%  
| Due: End of Week 14 |

| Item 3 | Title: Fundamentals of Software Engineering  
| Type: In-Semester - learning tasks  
| Weighting: 10%  
| Due: During tutorials in Weeks 10, 11, and 12 |

| Item 4 | Title: 3 hr examination  
| Type: Formal Examination  
| Weighting: 70%  
| Due: University Examination Period |

The examination is open book. Students may sit the exam with any materials in their possession (other than a computer or electronic dictionary) that are relevant to the exam and do not cause a public nuisance.

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

In-Semester

Unless specifically stated in the specification of the assessment item provided on the unit website, it
Assessment 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 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 will be held at ZUT, Hangzhou, and is conducted by the University Registrar.

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.

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