

Unit Outline 2009 – Semester 1

Introduction to Software Engineering – 5531

Faculty: Information Sciences and Engineering

University of Canberra

*Australian Government Higher Education (CRICOS)
Registered Provider number: #00212K*

This Unit Outline must be read in conjunction with:

- a) *Studying at the University of Canberra: A Guide to Policies and Procedures*, which sets out University-wide policies and procedures, including information on matters such as plagiarism, grade descriptors, moderation, feedback and deferred exams, and is available at <http://www.canberra.edu.au/student-services>
- b) *Guide to Student Services at the University of Canberra*, and is available at <http://www.canberra.edu.au/student-services>
- c) Any additional information specified in section 6f.

1. General Information

1a Unit title

Introduction to Software Engineering

1b Unit number

5531

1c Semester and year offered

2009, semester 1

1d Credit point value

3

1e Unit level

Level 1

1f Name of Unit Convenor and contact details (including telephone and email)

Dr. David Clark, 11C49, 6201 2393, david.clark@canberra.edu.au

1g Name of Unit Moderator and contact details (including telephone and email)

Dr. Girija Chetty, 11C48, 6201 2512, girija.chetty@canberra.edu.au

1h Administrative contact details (including name, location, telephone and email)

The School Office, 11B14, 6201 2417, 6201 2153, ise@canberra.edu.au

2: Academic Content

2a Unit description and learning outcomes

Syllabus

This unit introduces students to the foundations of programming and testing. Software quality and how it can be achieved is an underpinning theme. Frameworks are presented for problem solving in terms of fundamental data structures and algorithms. Data structures include arrays and structures. Techniques include functions, recursion and use of libraries. Analysis of algorithms, including measures of complexity, will be introduced. Implementations of the basic algorithms in a programming language will be explored. Those parts of the software engineering process which are applicable to an introductory subject are covered.

Learning Outcomes

On successfully completing of this unit students will be able to write and test small programs. Students will know the fundamental data structures and techniques used in computer science. They will employ good programming principles and know why these principles are important in constructing quality software. They will be competent in using arrays and structures.

Generic Skills

A full list of the generic skills expected of UC graduates can be found at <http://www.canberra.edu.au/uc/policies/acad/generic.html>

Those which are relevant to ISE are:

Communication

Graduates are expected to be able to:

- express knowledge, ideas and opinions in their professional field, both orally and in written form, with confidence and clarity;
- actively listen and respond to the ideas of other people;

Information Literacy and Numeracy

Graduates are expected to be able to locate, identify, collate, analyse, manipulate, evaluate, interpret and present information and numerical data.

Information and Communication Technology

Graduates are expected to be able to select and use appropriate information and communication technology to retrieve, manipulate and present information.

Problem Solving

Graduates are expected to be able to:

- identify problems and analyse the main features of problems relevant to their professional field;
- apply appropriate problem solving processes, arguments, critical and creative thinking;
- implement and evaluate strategies for the resolution of problems;
- anticipate and define new problems; and
- identify and resolve new problems in new fields.

Working With Others

Graduates are expected to be able to:

- respect the rights of others irrespective of their cultural background, race or gender.

Professional Ethics

Graduates are expected to:

- act responsibly, ethically and with integrity in the context of their profession and their obligations to society; and
- appreciate the social and cultural context of their profession.

Lifelong Learning

Graduates are expected to:

- be independent self-directed learners with the capacity and motivation for lifelong learning;
- be aware of how they best learn;
- possess self-knowledge and the ability to assess their own performance critically and accurately; and
- have an understanding of how to apply their knowledge and abilities to many different contexts and fields.

Personal Attributes

Graduates are expected to:

- show commitment to ongoing self-development;
- value and respect differing views;
- be confident in themselves and their own skills and knowledge.

2b Prerequisites and/or co-requisites

None

3: Delivery of Unit and Timetable

3a Delivery mode

Lectures, tutorials

3b Schedule of topics/lectures/tutorials/practicals/field classes by week

Note: These are subject to change. Any changes will be posted on the subject's web page.

Week	Activity
1	Introduction to unit; Introduction to algorithms and programming
2	Expressions, reading writing; Selection statements, functions
3	Iteration; Testing
4	Arrays
5	parameters; 2 D arrays, pointers; Algorithm design and high level pseudocode
6	Strings, file IO; Software life cycle, functional decomposition
7	Test; Discussion of assignment 2, Return of test (if marked)
8 & 9	Class free period
10	Discussion of assignment 3, structs, searching; Macros in Excel and Word
11	Analysis of algorithms
12	Good programming habits; consultation assignment 3
13	Recursion; binary search, quicksort
14	Analysis of algorithms; Scripting languages
15	Regular expressions; review

4: Unit Resources

4a Lists of required texts/readings

C Program Design for Engineers (2nd ed, 2001), A/W, by Jeri R. Hanly & Elliot B. Koffman
(Recommended, but not required.)

4b Materials and equipment

4c Unit website

<http://www.ise.canberra.edu.au/un5531/>

5: Assessment**5a Assessment overview**

Assessment Item	Due Date	Weighting
Assignment 1	5pm, Friday, week 4	25% of assignment
Assignment 2	5pm, Friday, week 8	25% of assignment
Assignment 3	5pm, Friday, week 12	25% of assignment
Assignment 4	9am, Monday, week 15	25% of assignment
Test	Week 7, lecture 1	8% of exam mark
Lab test 1	Week 7, lab	8% of exam mark
Lab test 2	Week 11, lab	8% of exam mark
Lab test 3	Week 13, lab	8% of exam mark
Lab test 4	Week 15, lab	8% of exam mark
Final exam		60% of exam mark
Optional exercises	From time to time	Bonus marks

The 4 assignments will be averaged to give an assignment mark.

The tests and the final exam will determine the exam mark, as above.

An overall mark will be determined by adding 50% of the assignment mark, 50% of the exam mark and 10% of the bonus marks.

The minimum grade requirements are then

Grade	Exam mark	Overall mark
HD	80%	85%
DI	70%	75%
CR	60%	65%
P	50%	50%

5b Details of each assessment item

Specifications for the assignments and requirements for satisfactory completion are given later in the ISE handbook.

5c Special assessment requirements

Assignments that are not satisfactory must be resubmitted. To pass this subject it is necessary that there are no outstanding resubmissions at the beginning of week 16.

5d Supplementary assessment

There will be no supplementary tests or exam.

There are no deferred tests. The final exam will have a weighting of 100% on the exam mark for students who miss a test due to illness and who produce a doctor's certificate.

Students who miss the final exam due to illness may be able to sit for a deferred examination. A doctor's certificate stating that the student was not able to sit for the exam should be given to the lecturer in charge as soon as possible - generally within 3 days of the examination. See *Studying at the University of Canberra: A Guide to Policies and Procedures* <https://guard.canberra.edu.au/cocoon/policydb/displayDocument?DocumentId=259> for more details.

5e Text-matching software

Students will submit their source code for all assignments to a CVS repository. Although this is primarily intended for automatic marking, it does mean that the source code is available for text matching if the need arises.

6: Student Responsibility

6a Workload

The amount of time you will need to spend on study in this Unit will depend on a number of factors including your prior knowledge, learning skill level and learning style. Nevertheless, in planning your time commitments you should note that for a 3cp Unit the total notional workload over the fifteen week semester is assumed to be 150 hours or an average of 10 hours per week. These hours include time spent in classes. The total workload for Units of different credit point value should vary proportionally. For example, for a 6cp Unit the total notional workload over a fifteen week semester is assumed to be 300 hours or an average of 20 hours per week.

6b. Special Needs

Students who need assistance in undertaking the unit because of disability or other circumstances should inform their Unit Convener or the Disabilities Office as soon as possible so the necessary arrangements can be made.

6c. Attendance requirements

Students should attend all lectures and tutorials.

6d. Required IT skills

Familiarity with Windows.

6e. Costs

6f. Additional information

7: Student Feedback

All students enrolled in this Unit will have an opportunity to provide anonymous feedback on the Unit at the end of the Semester via the Unit Satisfaction Survey which will be presented to you on OSIS. Your lecturer or tutor may also invite you to provide more detailed feedback on their teaching through an anonymous in-class questionnaire administered through the University's Teaching and Learning Centre (TLC).

8: Authority of this Unit Outline

Any change to the information contained in Section 2 (Academic content), Section 3 (Delivery of Unit and timetable) and Section 5 (Assessment) of this document, will only be made by the Unit Convener if the written agreement of staff and a majority of students has been obtained; and if written advice of the change is then forwarded to each student enrolled in the Unit at their registered term address. Any individual student who believes him/herself to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.