

**Software Technology I – 4483
And
Computers and Programming G - 6686**

Unit Outline 2009

Faculty of Information Sciences and Engineering

University of Canberra

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

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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: Software Technology I, Computers and Programming G

1b Unit number: 4483, 6686

1c Semester and year offered: S2 2009

1d Credit point value: 3

1e Unit level: 1

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

Dr. Girija Chetty
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1g Name of Unit Moderator and contact details (including telephone and email)

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

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2: Academic Content

2a Unit description and learning outcomes

Unit description

The unit provides a contextual approach to the art and science of software construction, introducing sufficient theory and practice of computer programming to enable further studies in computing. It will stress fundamental issues in the design and construction of programs in general. Topics covered include: algorithm design; problem solving within an application framework; classes / objects; object interaction; modular program construction including the principles of problem oriented data abstraction; encapsulation and information hiding; inheritance and polymorphism; file input and output; reusable component libraries; program testing; with emphasis on the production of simple, reliable and maintainable software.

Learning outcomes

On successfully completing the unit, a student will be able to build a complete and correct application by applying the principles of object oriented programming including encapsulation and information hiding; inheritance and polymorphism, validation and testing; and be able to apply basic design constructs including structured data types; and iterative control structures.

Graduate Attributes

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.

2b Prerequisites and/or co-requisites: (a) or (b)

(a) Introduction to Information Technology (4478)

And

One of the following units:

Discrete Mathematics (6698)

Mathematics for information sciences (7089)

Or

(b) Introduction to Software Technology

Or

Appropriate skills in programming

These may have been achieved by studying an appropriate introductory programming course in the previous years of study or work experience. If you have any questions about your prerequisites, you should consult with the Unit Convener. (Dr. Girija Chetty)

<p>3: Delivery of Unit and Timetable</p>

3a Delivery mode

The unit will be delivered face-to-face on campus with two 1.5-hour lectures and one 2-hour tutorial / laboratory per week.

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

Week	Activity	Assessment Tasks
	Lecture /Tutorial/Laboratory	
1	Introduction to the Unit Introduction to Java IDE : BlueJ and Net Beans	
2	Java Language Features	
3	Objects and Classes	
4	Basic Java Library Classes	Class Test I
5	Encapsulation and Object Interaction	
6	Arrays and Array Lists	
7	Java GUI classes, JUnit testing and JavaDocs	Assignment 1 Due
8	Mid Semester Break	
9	Mid Semester Break	
10	Inheritance and Polymorphism	
11	Abstract Classes and Interfaces	Class Test 2
12	File I/O and Exceptions	
13	Sorting and Searching	Lab Report Due
14	Advanced Java GUI Classes and Object Oriented Design	Assignment 2 Due
15	Revision and Sample Exam	

4: Unit Resources

4a Lists of required texts/readings

Objects First with JAVA _ A practical Introduction Using BlueJ
David Barnes and Michael Kolling, Fourth Edition, Prentice Hall
Location: UCU Bookshop / Library

Reference Books:

(1) Java Software Solutions
Lewis & Loftus, 6th Edition, Addison Wesley

(2) Big Java
Cay Horstmann, 3rd Edition, Wiley Publishing

4b Materials and equipment

Software: The software used in the laboratories for working on different assessment tasks in this unit will be the Java programming language with Integrated Development

Environments - BlueJ and/or Net Beans. While BlueJ provides an integrated Java environment designed specifically for introductory programming language learning, the NetBeans IDE extends the capabilities of BlueJ further with full capabilities needed for commercial software development. Both are open source and freely downloadable from the BlueJ site at <http://www.bluej.org/> or Netbeans site at <http://www.netbeans.org/> Both the IDEs require the installation of Java 5/ Java 6. This can also be downloaded freely from <http://java.sun.com/>

4c Unit website

The unit will be administered through UC online learning environment Moodle, which can be accessed at <http://learnonline.canberra.edu.au/>

5: Assessment

5a Assessment overview

Assessment Item (including exams held in the exam period)	Due Date of Assignments	Weighting (total to equal 100%)
Assignment 1 – Java Programming	5 pm Friday Week 7	15 %
Assignment 2 – Java Project	5 pm Friday Week 14	20 %
Tutorial Test 1	In Class Week 4	05 %
Tutorial Test 2	In Class Week 11	10 %
Lab Report	5 pm Friday Week 13	10 %
Final Examination	Exam period	40 %

5b Details of each assessment item

- Examination: 3 hour examination; two A4 sides of handwritten notes permitted.
- Each class test will be held in the tutorial class. There are no notes allowed. The class test time allowed is a maximum of 45 minutes.
- For lab report (worth 10%), you will be submitting a laboratory report on a set of programming activities in Week 13.
- The details of each assignment will be given on each assignment handout. Late Assignments (without prior approval from the lecturer) will receive a penalty of 10% of the value of the assignment for each day late. An assignment submitted after one week of the assignment due date will attract a maximum of 50%.
- Assignments are meant to be individual work, although talking a problem over with another student or tutor is considered one reasonable way of learning. However, the actual implementation must be your own work. Assignments which are found to be duplicates will have the marks divided among them. Experience

has shown that students who do not do their own work are unlikely to pass the exam (and therefore the unit).

- It is recommended that students who did not submit any internal assessment activities or participate in the unit throughout the semester do not apply for deferred exam.

5c Special assessment requirements

1. In order to pass the unit, students need to sit for all tests and the exam, and have no outstanding resubmissions by the exam time.
2. In the case of illness, misadventure or unavoidable commitments at the scheduled time of an examination, students should contact the Unit Convener as soon as possible. (well in advance).
3. Grades: For final assessment in the subject, the result will be one of the following grades: HD, DI, CR, P or Fail.
4. Performing satisfactorily in the assignments means there are no outstanding submissions by the exam time.

Subject to meeting the above requirements, your grade will depend on your exam mark (EM) and the assignments mark (AM), where Exams mark (EM) = (Final Exam Mark + Test 1 mark + Test 2 mark) converted to percentage.

Assignment mark (AM) = (A1 mark + A2 mark + Lab Report mark) converted to percentage.

Grades will be awarded according to the following table:

Grade	Percentage Marks in each of the Exams (EM) Assignment (AM) components
HD	EM in the range ≥ 85 & AM ≥ 85
DI	EM in the range ≥ 75 & AM ≥ 75
CR	EM in the range ≥ 65 & AM ≥ 65
P	EM in the range ≥ 50 & AM ≥ 50
NX	EM in the range < 50 OR AM < 50

5d Supplementary assessment

To be eligible to undertake supplementary assessment in a unit, a student must:

_ be enrolled in their final semester of study;

_ have failed a single unit, with a final mark between 45-49% in the unit;

_ have passed all other units undertaken in that semester.

The failed unit must be the final unit required to complete the academic requirements of their course.

5e Text-matching software

Students may be required to submit text-based assignments electronically to be checked for matching text. If so, instructions on how to do this and information about the process will be made available in conjunction with the first of any such assessment items.

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

Experience has shown that students who do not attend the lectures and tutorials will have difficulty in passing the subject.

6d Required IT skills

Please refer to section 2b.

6e Costs

Text book and consumables

6f Additional information

It is important that students refer to Unit Website (through Moodle – UC online learning environment) on a regular basis for any variations in the schedule and deadlines for the assessment tasks.

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/her to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.