

Software Technology 2 – 7170

Unit Outline 2009

Faculty of Information Sciences & 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 2
- 1b Unit number**
7170
- 1c Semester and year offered**
Semester 1, 2009
- 1d Credit point value**
3
- 1e Unit level**
2
- 1f Name of Unit Convener and contact details (including telephone and email)**
Dat Tran, 6201 2394, Dat.Tran@canberra.edu.au, Office 11B17
- 1g Name of Unit Moderator and contact details (including telephone and email)**
Chris Chlap, 6201 2391, Chris.Chlap@canberra.edu.au, Office 11B16
- 1h Administrative contact details (including name, location, telephone and email)**
The School Office at 11B14, Ph: 6201-2417/6201-2153, email: ise@canberra.edu.au

2: Academic Content

2a Unit description and learning outcomes

Unit description: The unit provides an in-depth study of the software construction process. Topics covered include modular programming constructs including encapsulation, information hiding, inheritance and polymorphism; the specification, modularisation and verification of abstract data types (ADTs); data structures including arrays, vectors, stacks, queues, lists, trees, sets, maps, hash tables and heaps; and algorithms including sort, search and recursion. For ADTs in general, the unit deals with operations, representation and algorithms, space and time efficiency, and appropriateness for different applications.

Learning outcomes: On completion of this unit students will be able to construct software which is correct, robust, and maintainable; design new modules from existing library modules; choose data structures appropriate to an application; recognise and apply the principles of good software design; construct efficient algorithms for small problems; and use such design constructs as dynamic data structures, recursive algorithms and abstract data types.

2b Prerequisites and/or co-requisites

Software Technology 1 and one of Discrete Mathematics and Mathematics for Information Sciences

3: Delivery of Unit and Timetable

3a Delivery mode

This subject is delivered on campus with weekly lectures and tutorials/labs, as per UC timetable for the semester.

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

Week	Activity
1	C# Programming
2	Class Construction, Collections
3	Array, ArrayList, String, StringBuilder, Pattern Matching, Text Processing
4	Sorting, Search, and Recursion
5	Refactoring, Programming with Threads
6	Stack, Queue, and BitArray
7	<i>Public holiday (Good Friday)</i>
8	<i>Class free period</i>
9	<i>Class free period</i>
10	Linked Lists
11	Binary Trees and Binary Search Trees
12	Dictionary, DictionaryBase, and SortedList
13	Hashing and HashTable, Advanced Algorithms, Advanced Data Structures
14	Graphs, Graph Algorithms
15	Review

4: Unit Resources

4a Lists of texts/readings

- Data Structures and Algorithms Using C#, Michael McMillan, Cambridge Press, 2007, ISBN: 978-0-521-67015-9
- Modern Software Development Using C# .NET, Richard Wiener, ISBN: 978-0-619-21759-4, 2007
- Data Structures with C++ Using STL, William Ford & William Topp, Prentice Hall, 2002

Online materials:

- Lecture materials, tutorial questions and answers, assignment specifications, and other related information are available on the subject web site.
- <http://msdn.microsoft.com/en-au/default.aspx>
- <http://www.codeproject.com/>
- <http://www.c-sharpcorner.com/>

4b Materials and equipment

Computers and software in Building 11 laboratories are used in this unit. The use of private personal computers and relevant software is beneficial, but not essential. Software: Visual Studio 2008, Language: C#.

4c Unit website

Available in Moodle

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	11:59PM Sunday of Week 6	20%
Assignment 2	11:59PM Sunday of Week 14	20%
Examination	<i>university exam period</i>	60%

5b Details of each assessment item

Assignment 1: All tutorial topics listed in Weeks 2 to 6 inclusive

Assignment 2: All tutorial topics listed in Weeks 10 to 14 inclusive

Exam: 3 hours, **permitted materials:** 2 sides of A4 notes (One A4 page with notes on both sides, handwritten or typed), non programmable calculator, and unannotated non-electronic language dictionary (English/Foreign)

5c Special assessment requirements

For final assessment in the subject, the result will be one of the following grades: HD, DI, CR, P or Fail (NX, NC, NS, or NN).

Total mark = assignment 1 mark (out of 20) + assignment 2 mark (out of 20) + 0.6 * examination mark (out of 100)

The grade for the subject is then determined according to the following table:

Total mark (out of 100)		Exam mark (out of 100)	Final Grade
≥ 85	<i>and</i>	≥ 85	HD
≥ 75	<i>and</i>	≥ 75	DI
≥ 65	<i>and</i>	≥ 65	CR
≥ 50	<i>and</i>	≥ 50	P
< 50	<i>or</i>	< 50	NX, NC, NS or NN

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

There will be no roll calls for lectures; however, students are encouraged to make every attempt to attend all scheduled teaching activities. Failing to do so may result poor understanding and failure of the unit.

Students are required to mark attendance record sheets for tutorials. Failing to do so will have a negative impact on your final result.

6d Required IT skills

Please see prerequisites - Section 2b

6e Costs

Textbook, software and consumables. Information about the DETYA guidelines on student charges for HECS students can be found on OSIS

6f Additional information

All assignments will require background reading, intelligent criticism, keen observation and the development of a line of argument to support any particular adopted stance. It is also a requirement that each assignment is totally the work of the individual submitting it (unless explicitly stated otherwise) and that it is produced specifically for the subject in question. The reproduction, paraphrasing, summarizing or otherwise presenting in altered form, another person's ideas or arguments without acknowledgment is plagiarism. Plagiarism includes submitting work prepared by another author, including another student, as one's own. Any form of plagiarism will be reported to the Head of School for investigation.

Special Needs: Please notify your lecturer or tutors of any special needs you have, for example, special arrangement for people with disabilities etc.

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
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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.