Unit Outline 2011
Faculty of Information Sciences and Engineering

Software Technology 2
7170
This Unit Outline must be read in conjunction with:

a) UC Student Guide to Policies, 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 (scroll to bottom of page) http://www.canberra.edu.au/student-services

b) UC Guide to Student Services, and is available at (scroll to bottom of page) http://www.canberra.edu.au/student-services

c) Any additional information specified in section 6h.

1: General Information

1a Unit title
Software Technology 2

1b Unit number
7170

1c Teaching period and year offered
Semester 1, 2011

1d Credit point value
3

1e Unit level
2

1f Name of Unit Convener and contact details (including telephone and email)
Convener: Dat Tran, 6201 2394, Dat.Tran@canberra.edu.au, 11B17
Moderator: Dharmendra Sharma, 6201 2153, Dharmendra.Sharma@canberra.edu.au, 11B13

1g 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

1. construct software which is correct, robust, and maintainable;
2. design new modules from existing library modules;
3. choose data structures appropriate to an application;
4. recognise and apply the principles of good software design;
5. construct efficient algorithms for small problems; and
6. use such design constructs as dynamic data structures, recursive algorithms and abstract data types.

2b Generic skills
1. Communication
2. Information literacy
3. ICT
4. Problem solving
5. Working with others
6. Professional

2c Prerequisites and/or co-requisites
Software Technology 1

3: Delivery of Unit and Timetable

3a Delivery mode
This subject is delivered in traditional mode, that is on-campus in standard semesters with weekly lectures and tutorials.

3b Timetable of activities, such as lectures/ tutorials/ practicals/ field classes, showing key dates and topics

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C#, Arrays, Debugging and Handling Exceptions</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Applications: Console, Windows and Windows Presentation Foundations</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Algorithms: Recursion, Graphs</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Algorithms: Sort, Search</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Class: Encapsulation, Information Hiding, Inheritance and Polymorphism</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Abstract Data Types, Collection Base Classes</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Stack and Queue</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Class free period</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Singly Linked List, Doubly Linked List</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Dictionary and Sorted List</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Binary Trees and Binary Search Trees</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Hash Table</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Heap</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Refactoring, Review</td>
<td></td>
</tr>
</tbody>
</table>

4: Unit Resources

4a Lists of texts/readings
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 2010, Language: C#.

4c Unit website
Available in Moodle. Access to the unit website on learnonline.canberra.edu.au is a requirement for students enrolled in the unit.

5: Assessment

5a Assessment overview

<table>
<thead>
<tr>
<th>Assessment item (including exams held in the exam period)</th>
<th>Due date of assignments</th>
<th>Weighting (total to equal 100%)</th>
<th>Addresses learning outcome(s)</th>
<th>Addresses generic skill(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>22:00 Sun Week 7</td>
<td>20%</td>
<td>1, 2 and 5</td>
<td>1 – 6</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>22:00 Sun Week 14</td>
<td>20%</td>
<td>3, 4 and 6</td>
<td>1 – 6</td>
</tr>
<tr>
<td>Exam</td>
<td>exam period</td>
<td>60%</td>
<td>1, 2, 3, 4, 5 and 6</td>
<td>2 and 4</td>
</tr>
</tbody>
</table>

5b Details of each assessment item
Assignment 1: All tutorial topics listed in Weeks 2 to 7 inclusive
Assignment 2: All tutorial topics listed in Weeks 9 to 13 inclusive
Exam: 3 hours, permitted materials: 4 sides of A4 notes (Two A4 pages 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:

<table>
<thead>
<tr>
<th>Total mark (out of 100)</th>
<th>Exam mark (out of 100)</th>
<th>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 85</td>
<td>≥ 85</td>
<td>HD</td>
</tr>
<tr>
<td>≥ 75</td>
<td>≥ 75</td>
<td>DI</td>
</tr>
<tr>
<td>≥ 65</td>
<td>≥ 65</td>
<td>CR</td>
</tr>
<tr>
<td>≥ 50</td>
<td>≥ 50</td>
<td>P</td>
</tr>
<tr>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>NX, NC, NS or NN</td>
</tr>
</tbody>
</table>

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 **Academic Integrity**
Students have a responsibility to uphold University standards on ethical scholarship. Good scholarship involves building on the work of others and use of others work must be acknowledged with proper attribution made. Cheating, plagiarism, and falsification of data are dishonest practices which contravene academic values.

5f **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 semester or term is assumed to be 150 hours. 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 semester or term is assumed to be 300 hours.

6b **Special needs**
Students who need assistance in undertaking the unit because of disability or other circumstances should inform their Unit Convener or UC AccessAbility (formerly 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 **Withdrawal**
If you are planning to withdraw please discuss with your unit convener. Please see this link for further information on deadlines.

6e **Required IT skills**
Students will use Windows XP/Vista/7 and MS Visual Studio 2010.

6f **Costs**
Textbook, software and consumables. Information about the DETYA guidelines on student charges for HECS students can be found on OSIS.

6g **Work Integrated Learning**
This unit covers the “ACS Core Body of Knowledge for Information Technology Professionals” in the following areas:
- (brief) 5.1 Computer Organisation and Architecture,
- (brief) 5.7 Ethics/Social Implications/professional Practice.

6h **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 (USS) 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), and Section 5 (Assessment) of this document, will only be made by the Unit Convener if the written agreement of Head of Discipline and a majority of students has been obtained; and if written advice of the change is then provided on the unit site in the learning management system. If this is not possible, written advice of the change must be 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.