

Unit Outline 2009 – Semester 2

Introduction to Information Technology – 4478

Introduction to Software Technology G – 6694

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 Information Technology
Introduction to Software Technology G

1b Unit number

4478
6694

1c Semester and year offered

Semester 2, 2009

1d Credit point value

3

1e Unit level

Introduction to Information Technology, level 1
Introduction to Software Technology G, level G

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

Dr. Roland Goecke, 11C10, 6201 2114, roland.goecke@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 provides a gentle introduction to the art of writing software in modern information technology environments. The unit covers the programming logic required to create information system applications regardless of the computer language used. Students develop small event-driven applications using a Graphical User Interface. Data structures include arrays, records and tables. Those parts of the software engineering process, in particular testing, which are applicable to an introductory subject are incorporated. The subject also includes an introduction to graphics and programmatically accessing a database.

Learning Outcomes

On successfully completing of this unit students will be able to:

1. write and test small applications using a graphical user interface;
2. use a variety of controls for user interaction;

3. programmatically access a database;
4. programmatically access the contents of a file;
5. implement simple graphics functionality;
6. employ good programming principles;
7. explain why these principles are important;
8. demonstrate competency in using arrays and structures;
9. demonstrate the ability to analyse a problem and to provide a solution in the form of a software programme; and
10. test a software programme in a systematic and efficient way.

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 IIT / ISTG 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

<h2>3: Delivery of Unit and Timetable</h2>

3a Delivery mode

Lectures, tutorials

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

The unit will be delivered face-to-face on campus with two 1.5-hour lectures and one 2-hour tutorial / laboratory per week. Tutorials and laboratories are in pairs – a one hour tutorial followed by a one hour laboratory – and start in week 2. A student who enrolls in a tutorial is automatically enrolled in the associated laboratory.

Timetabling information is available at <http://www.canberra.edu.au/timetable/>.

Note: These are subject to change. Any changes will be posted on the subject's Moodle (LearnOnline) homepage.

Week	Activity
1	Introduction to unit; Visual Studio .NET, VB controls
2	Introductory graphics; Code and data, expressions, assignment statements
3	Selection; Demonstration of building an application
4	Iteration, file IO; Arrays
5	Arrays; Strings, Structures

6	Methods; Editing / Error checking
7	Undo; Test 1 (in lecture)
8 & 9	Class free period
10	Databases, relational databases; Databases in VB .NET
11	Report generation; Manipulating tables
12	Style; Applications tester
13	Testing
14	Sorting; Searching
15	Review and exam preparation

4: Unit Resources

4a Lists of required texts/readings

“Visual Basic .NET for Students” (2nd ed., 2005), A/W, by Douglas Bell & Mike Parr

4b Materials and equipment

Software: The software used in the laboratories for working on different assessment tasks in this unit will be the VB.NET programming language with the Integrated Development Environment (IDE) provided by Visual Studio .NET (2008) Academic Version under the Windows XP operating system. These are available in the laboratories at the Faculty of Information Sciences and Engineering, building 11. In addition, students are allowed to copy Visual Studio .NET onto their own computer. The installation CD-ROM is available from the Faculty Reception.

Note: Students are permitted to use their own computer equipment, but must ensure that their assignment submissions adhere to the requirements listed above. It is the responsibility of users of the Windows Vista operating system to ensure that their assignment submissions, and in particular the executable files, run on the Windows XP operating system environment provided at the Faculty of Information Sciences and Engineering.

4c Unit website

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

5: Assessment

5a Assessment overview

In IIT / IST G students are required to satisfactorily complete a number of assignments **and** to perform satisfactorily in four tests and an exam.

There will be three programming assignments and a testing assignment. The programming assignments each have three parts, A, B and C. In each case, part A is the easiest and part C the most challenging. Students who are content with a pass only have to complete part A of each programming assignment and the testing assignment, whilst students who aspire to a high distinction should do all parts.

The final exam will have two parts, part A and part B. An “exam A” mark will be determined from the three tests and part A of the final exam, with weightings of 10%, 10%, 10% and 70% respectively. An “exam B” mark will simply be the mark on part B of the final exam.

To be awarded a particular grade in IIT / IST G, students must meet both the assignment requirements and the tests + exam requirements in the table below.

Grade	Assignments	Tests + Exams
Pass	Graphics A Windows A Database A Testing	50% on “exam A”
Credit	Pass + 2 of Graphics B Windows B Database B	70% on “exam A”
Distinction	Pass + 4 of Graphics B, C Windows B, C Database B, C	75% on “exam A” + 50% on “exam B”
High Distinction	Graphics A, B, C Windows A, B, C Database A, B, C Testing	75% on “exam A” + 75% on “exam B”

The test dates and weightings are:

Exam	Date	Weighting
Test 1	Week 7, lecture 2	10 % of “exam A”
Test 2	Week 13, lab	10% of “exam A”
Test 3	Week 15, lab	10% of “exam A”
Final exam, parts A and B	During exam period	70% of “exam A” 100% of “exam B”

If an assignment is not satisfactory, students will be told why and given an opportunity to resubmit it. Submission and resubmission dates for assignments are given below.

Assignment	Submission Date	Resubmission Date
Graphics A	10am, Monday, week 5	lab, week 6
Windows A	10am, Monday, week 7	10am, Friday, week 8
Graphics B	10am, Friday, week 9	lab, week 12
Graphics C	10am, Friday, week 9	lab, week 12
Windows B	10am, Friday, week 9	lab, week 12
Windows C	10am, Friday, week 9	lab, week 12
Database A	10am, Monday, week 13	lab, week 14
Database B	10am, Monday, week 13	lab, week 14
Database C	10am, Monday, week 13	lab, week 14
Testing	10am, Monday, week 15	10am, Monday, week 16

5b Details of each assessment item

Specifications for the assignments and requirements for satisfactory completion are given later in the IIT / IST G handbook, available on the unit website on Moodle (LearnOnline).

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. Students are expected to familiarise themselves with the University's *Student Academic Integrity Policy* https://guard.canberra.edu.au/policy/policy.php?pol_id=3175. Experience has shown that students who do not do their own work are unlikely to pass the exam (and therefore the unit).

Assignments will be submitted electronically through the Unit Website interface on Moodle (LearnOnline). For the three programming assignments, this will be the software code developed by each student using the materials and equipment list under 4b. For the testing assignment, this will be the HTML code developed by the student. Submissions have to be in zipped format, containing the entire project folder of your assignment. Attach the IIT / IST G Assignment Cover Sheet for this assignment to the zipped file of your assignment, completing the self-assessment section. The cover sheet can be downloaded from the Unit Moodle site and then copied and pasted into your project folder, before bundling the contents of that folder in a ZIP file.

Assignment submissions will be assessed for addressing the specific requirements of each assignment, as stated in the assignment handouts, as well as for employing good programming principles. Assignment submissions will receive a simple Pass / Resubmit mark, which together in their entirety with the other assessment items (tests, exams) define a student's final grade as outlined in section 5a.

Graphics assignment Parts A, B, C:

Purpose:

- This assignment gently introduces the student to developing a Graphical User Interface (GUI) using the VB.NET designer and to connect it to the underlying software functions that allow a user to draw certain elements

in a window (Part A), to read text data from a file (Part B) and to provide undo functionality (Part C).

- This assignment assesses learning outcomes 1, 2, 4, 5, 6, and 9.

Guidelines:

- You are to develop a simple GUI in the designer of VB.NET that enables a user to draw certain graphics elements in a window.
- You are to demonstrate your understanding of the appropriate use of constants vs literals.
- You are to show your understanding of good programming principles, such as software layout (methods, functions, separation of blocks of code according to functionality), commenting, good names, and structures.
- You are to implement the reading in of data from a text file using the built-in functionality in VB.NET.
- You are to demonstrate the use of arrays and structures in implementing an undo function.

Assessment criteria:

- The following criteria will be used in marking this assignment:
 - Effective GUI layout design (all Parts)
 - Correct drawing of graphics elements (Part A)
 - Correct reading of data from a text file on disk (Part B)
 - Correct undo of graphics elements (Part C)
 - Understanding of good programming principles as demonstrated in your software layout (all Parts)

Windows assignment Parts A, B, C:

Purpose:

- This assignment introduces the student to analysing the business rules of a problem, to formulate the logic of the problem in VB.NET and to provide a solution in the form of a software programme (Part A). Part B adds editing (checking for user errors) and Part C involves reading text data from a file.
- This assignment assesses learning outcomes 1, 2, 4, 6, 8, and 9.

Guidelines:

- You are to develop a simple GUI in the designer of VB.NET that enables a user to make selections according to the business rules of the problem.
- You are to implement the business rules of the problem in VB.NET.
- You are to demonstrate your understanding of the appropriate use of constants vs literals.
- You are to show your understanding of good programming principles, such as software layout (methods, functions, separation of blocks of code according to functionality), commenting, good names, and structures.
- You are to demonstrate your understanding of applying arrays and structures.

Assessment criteria:

- The following criteria will be used in marking this assignment:

- Correct implementation of business rules (all Parts)
- Use of arrays (all Parts)
- Output formatting (all Parts)
- Understanding of good programming principles as demonstrated in your software layout (all Parts)
- Editing (checking for user errors) (Part B)
- Correct reading of data from a text file on disk (Part C)

Database assignment Parts A, B, C:

Purpose:

- This assignment will test the student's knowledge of programmatically accessing a database stored in MS Access format via the built-in VB.NET functionality and SQL commands.
- This assignment assesses learning outcomes 1, 2, 3, 6, 7, and 8.

Guidelines:

- You are to develop a software programme that produces a number of reports about the data stored in the database and saves them as files on disk. This programme should have a simple GUI that lets the user select which report is to be generated.
- The required fields for the three reports in Part A are pre-determined as per the assignment handout.
- In Part B, you are to extend the GUI, so as to enable the user to select which fields of the tables in the database are used in the report generation.
- In Part C, you are to extend the report by performing certain calculations on the data in the database and adding the output to the report.

Assessment criteria:

- The following criteria will be used in marking this assignment:
 - Extracting the required information from the database (all Parts)
 - Output formatting (all Parts)
 - Understanding of good programming principles as demonstrated in your software layout (all Parts)

Testing assignment:

Purpose:

- This assignment introduces the student to systematic testing of software code. It makes use of the *Framework for Integrated Testing (FIT)*.
- This assignment assesses learning outcome 10.

Guidelines:

- You are to use the FIT environment to test three programmes that will be provided to you in the form of a dynamic link library.
- You are to analyse the conditions and business rules associated with the programs and to develop testing criteria and testing values, which you will implement in HTML code in the FIT environment provided to you. As part of this, you need to define good test descriptions and effective tests.

- You are to submit a written report on the results of your testing for each programme with details on which conditions / business rules failed, if any.

Assessment criteria:

- The following criteria will be used in marking this assignment:
 - Testing all required conditions / business rules
 - Quality of written report

Examination: 3 hour written examination; two A4 sides of handwritten notes permitted.

5c Special assessment requirements

To obtain a particular grade in this subject it is necessary that there are no outstanding resubmissions for that grade at the beginning of week 16.

The lecturer reserves the right to question students orally on any of their submitted work.

5d Supplementary assessment

There will be no supplementary tests or exam.

There are no deferred tests. Part A of the final exam will have an increased weighting for “exam A” 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 why 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.

Students will only be allowed to sit for a deferred examination if there are no outstanding submissions or resubmissions for the assignments required to pass the subject as specified above.

5e Text-matching software

Your eSubmissions are retained and may be compared with other students' if the need arises. Students are expected to uphold the University's standards on ethical scholarship and should familiarise themselves with the University's *Student Academic Integrity Policy* https://guard.canberra.edu.au/policy/policy.php?pol_id=3175.

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

6d. Required IT skills

Familiarity with Windows.

6e. Costs

Text book and consumables

6f. Additional information

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

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.