ENGG1811 Computing for Engineers
Semester 1, 2012

Course Introduction

1. Course Aims

ENGG1811 is an introductory computing course covering the following topics:

- Introduction to popular applications (such as spreadsheets and databases) to solve computational problems.
- Introduction to procedural programming (using Visual Basic for Applications) to solve engineering, business and scientific tasks.
- Introduction to some of the fundamental, current and emerging Information Technologies, with the aim of understanding their characteristics and how they might be exploited innovatively and effectively to solve problems.

While designed to fulfil computing requirements for many programs in Engineering, the course is suitable for other professional disciplines.

2. Student Learning Outcomes

After completing this course, students should be able to

- design, program, document and test Visual Basic for Applications (VBA) programs that accurately comply with a given set of requirements.
- use applications such as spreadsheets and databases to effectively solve computational problems in science, engineering, commerce and humanities.
- gain an understanding of the limitations/advantages of some of the emerging IT technologies, and how to exploit them in solving engineering problems.

Lab exercises and assignment problems will test knowledge and skills you have acquired throughout the semester (in particular for the first two topics). Questions in the Mid-session test and the Final Written Exam will challenge your understanding of all the above three topics.

3. Teaching, Learning and Assessment

At university, the focus is on the self-directed search for knowledge. Lectures, labs, textbooks and recommended reading, assignments and exams are all provided as a service to assist you in this endeavour. It is your choice as to how much work you do in this course, whether it be preparation for classes, completion of assignments, study for exams or seeking assistance or extra work to extend and clarify your understanding. You must choose the approach that best suits your learning style and goals in this course. Note that the University expects you to do about 180 hours work for this course—including lectures, labs, and time spent on assignments. Of course this will vary according to your aims. The course is designed in such a way that passing the course will require a good understanding of the fundamental notions as well as good practical skills. This can only be achieved through regular and consistent work. If your aim is to obtain a high distinction then you will need to invest more time on this course.

Lectures

The aim of the lectures is to facilitate learning and understanding of the important concepts within course syllabus. They will provide the main source of course material delivered. There are three hours of lectures per week.

In the lectures, we will

- explain each topic
- demonstrate the principles in each topic with examples from the tools (spreadsheets, databases, programming structures) used in the course
- evaluate and discuss the relevance of the topic to IT and your career

You are invited to ask questions at the end of the class, or at any time if you think the question and answer is relevant to everyone else.

> Discussion with the person next to you in class is *not acceptable,* as it creates a level of noise that inevitably impacts on the rights of others who are trying to listen and learn.

Lecture Schedule

The proposed lecture schedule is:

Week	Topic
Week 1, 2, 3:	Spreadsheets - Basics of a Spreadsheet, Predefined functions (statistical, lookup), Filters, Charts

	Analysing Data - Descriptive Statistics, What-If Analysis, Goal Seek, Solver.
Week 4:	Databases - Introduction and Case studies
Week 5-10:	Problem Solving and Programming: Introduction to procedural programming and VBA, data types, variables and constants, operators and statements, selection (If and Select Case statements) and iteration (While and For statements), modularity using functions/subprograms, parameter passing. Program design, development, testing and debugging. Strings, Collections, Excel's object model, Macro Recorder. Problem solving case studies.
Week 11, 12:	Introduction to some of the current and emerging Information Technologies

Please note that the above schedule is subject to minor change. There is a one week break after week 6.

Laboratory Classes

Laboratory Classes give you a chance to **practise** problem solving and programming skills on small, well defined examples. ***Labs start in week 2.*** The examples have been chosen to highlight particular aspects of problem solution, and will give you enough grounding in problem solving to assist you in completing your assignment work. Your tutor will be present in your Lab Class to answer any questions you may have.

The lab exercises will be available during the semester via the course's web page. **Students are advised not to fall behind in laboratory work**.

Labs are *assessable* mainly to motivate you to complete them diligently (surveys consistently rate lab classes as the most valuable learning experience in the course). The assessment must be completed within the 2-hour period in the designated week. To avoid tutor overload, you must be ready to have some part of the work ready for assessment 30 minutes before the end of the class. Any work presented after this time may not be able to be assessed by the tutor. We try to design the lab so that the basic concepts are covered in the first part, and this carries at least 50% of your nominal lab marks.

Each lab is marked out of 3 marks: 1 mark from a multiple choice question and 2 marks from your tutor's assessment of your lab work.

In each lab, you need to answer online one multiple choice question from a bank of similar questions, and this carries 1 mark of the nominal 3 marks for each lab. These multiple choice questions will be based on the previous week's lecture material and/or the present lab exercises. Your tutor will assess your other lab work and provide you with a mark out of 2.

Please note that at the time of marking your lab exercises, your tutor may ask you to solve other similar problems. You need to demonstrate that you are able to solve lab exercises and related problems, in order to receive any marks for your lab work. In other words, using some else's lab solution is pointless!

Missing a lab, or not having some or all of it assessed, it is not a disaster: only the best 10 lab marks count (separately for the online assessment and the tutor's assessment). What counts is the practice at doing them (including any leftover parts afterward as exam preparation).

If you miss an occasional lab class it won't matter much as the best 10 lab assessments are used for your lab mark. Similarly a day or two of illness should not have a serious impact on assignment work if you've started early (as you should). However, if you are absent for an extended period due to illness, then you may apply to the class administrator (email the class account or meicheng@cse.unsw.edu.au) for an extension. Written evidence of the problem will be required. A similar procedure applies if you miss the mid-semester test in week 6 due to a documented medical or similar problem.

You can only have your lab work **marked** during **your** scheduled **lab class**. It is **not** possible to have your work marked in another class.

Your weekly lab class is 2 hours long and it starts in **Week 2** of the semester.

Consultation

Each week, starting from week 3, a lecturer or tutor will be available to discuss with you, on a one-on-one basis, any aspect of the course that you are having problems with. This is the most personalised form of teaching for this course, and you should take every advantage of it, particularly if you are experiencing difficulties. When assignments are due additional consultations will be offered.

Please **check the class web page for current consultation time**s (see "Consultations" in the left panel of the class web page).

Every effort will be made to see as many students as possible. Please come prepared in order to maximise the time that's available to you.

Assignments

Assignments give you the chance to practise what you have learned on relatively large problems (compared to the small exercises in the Lab Classes). Assignments are a very important part of this course, therefore it is essential that you attempt them yourself.

Please note that, one **final exam question** is **based directly on Assignment 1**.

There will be two assignments:

- Assignment 1 will be due in Week 9 (requirements available in week 6).
- Assignment 2 will be due in Week 11 (requirements available in week 9).

Assignments are to be completed in your own time. To maximise the learning benefits from doing assignments, it is essential that you start work on assignments early. Do not leave your assignments until the last minute. If you submit an assignment late, the maximum available mark is reduced by an amount (usually 15%) per day that it is late. Assignments are submitted using a link from the class website.

Assignments 1 and 2: the aim for these assignments is to develop skills in all stages of the programming process: start by understanding the requirements; design a method to solve the problem; refine this design; implement and document the design and test extensively to validate that the program meets the requirements.

Examinations

A 45-minute Mid-Semester Test will be held in Week 6 during your scheduled lab class. It covers the first 4 weeks of lecture material (labs 2 to 5).

The final written examination will be held during the examination period. It will examine all material covered in the course, but will emphasise the material in the second half of the course.

Supplementary Exams

The document *Important Advice for Students* states the supplementary assessment policy for the School of CSE. The following criteria will be used when considering a student for a supplementary exam:

- has the student submitted a fully documented request for Special Consideration within 3 days of the exam;
- was there medical or other evidence to support the claim that the student's performance was seriously affected? Minor ailments like a cold; a headache--unless chronic, or severe enough to require prescribed medication; feeling "unwell", *etc* do not excuse a poor result;
- assignment and laboratory marks may not carry much weight in determining whether further assessment is warranted; and
- the student did not attend the exam, or attended the exam but was forced to leave through illness.

The document can be found on-line at:

http://www.cse.unsw.edu.au/people/studentoffice/policies/yellowform.html

Please take the time to read it carefully. If you are granted a Supplementary examination, then it will be held on the date specified in the above document. If you think that you may be eligible for a supplementary exam, then make sure you are available on that day. It is your responsibility to check at the School Office for details of Supplementary examinations. Please note that there will be NO further supplementary dates for this course. In other words we will NOT be able to offer you supplementary examination at any other time.

Assessment

The assessable components of the course are:

Component	**Mark**
Assignment 1	5%
Assignment 2	5%
Lab Exercises, best 10 (of 12)	10%
Mid-Semester Test	15%
Final Written Exam (**10.4 marks** of the 65 in the **final exam** are directly **related to Assignment 1**.	65%

Important:

- In normal circumstances you receive the sum of the component marks. 50 is a clear pass (you may receive a Pass Conceded if your result is very close to 50 and you have good results in other courses).
- However, if your exam mark is poor (less than one third or 22/65), your final mark is calculated using the formula

  Final = 3.7 * **Exam** * **Other** / (**Exam** + **Other**)

  where **Exam** is the raw exam mark out of 65 and **Other** is the sum of the other assessments, out of 35. This formula results in a mark that is less than 50.

4. Course Resources: Textbooks, Reading Materials and useful Online Resources

We encourage you to buy the following **customised textbook for ENGG1811**. To keep the cost down, we have negotiated a deal with the publisher and the customised textbook is available at a considerable discount. Importantly, you will be able to use the material as references after you complete the course.

Computing for Engineers (2nd Edition): Problem solving and Programming for ENGG1811
Pearson Education Australia, 2010.

The above textbook is available at UNSW Bookshop , the price is $61 (approximately)

We will provide additional references on the class web page to cover other many useful topics. These include video (Flash) demonstrations of key processes. It is your responsibility to make use of them, and in case you have any questions/problems, please contact your lecturer or tutor.

As discussed earlier, at university, the focus is on your self-directed search for knowledge. Lectures, labs, recommended reading, assignments and exams are all provided as a service to assist you in this endeavour. It is your choice as to how much work you do in this course, whether it be preparation for classes, completion of assignments, study for exams or seeking assistance or extra work to extend and clarify your understanding. You must choose the approach that best suits your learning style and goals in this course.

5. Administration

Units of Credits

6 units of credit

Pre-requisites

There are no pre-requisites for this course.

Course Web Page

http://www.cse.unsw.edu.au/~en1811

Staff

Staff Name	Role	Email	Phone (ext)
Dr Ashesh Mahidadia	Lecturer-in-charge	ashesh@cse.unsw.edu.au	9385-6556 (ext 56556)
Dr Geoff Whale	Lecturer	g.whale@unsw.edu.au	9385-4046 (ext 54046), prefer email contact
Mei Cheng Whale	Course Administrator	meicheng@cse.unsw.edu.au	9385-5683 (ext 55683)

Lecture Times

Stream A (class nbr 6536)	
Times	Location
Mon 5-6pm (Stream A)	Central Lecture Block 7 (K-E19-104)
Wed 11-12noon (Stream A)	Central Lecture Block 7 (K-E19-104)
Wed 4-5pm (Stream A)	Central Lecture Block 7 (K-E19-104)

Stream B (class nbr 6537)	
Times	Location
Mon 5-6pm (Stream B)	Old Main Building 149 (K-K15-149)
Wed 11-12noon (Stream B)	Old Main Building 149 (K-K15-149)
Wed 4-5pm (Stream B)	Old Main Building 149 (K-K15-149)

Getting Help

From time to time, various problems may arise in your study of this course. Below is a list of typical problems, with suggestions for where you might seek help with them:

Problem	Solution
Help with problems unrelated to this course	CSE Web Help Page
Can't understand lecture material	Ask the lecturer after the lecture times, OR ask your tutor during your lab class, OR go to a consultation.
Stuck with assignments, lab work	Ask your tutor during your lab, OR go to a consultation.
Want to change lab-tute class	Email class account (en1811@cse.unsw.edu.au)
Problems with lab workstations	CSE Help Desk
Problems with your account	CSE Help Desk
Problems with Uniwide access etc..	IT Service Centre, Ground floor, Library annexe. 9385-1333.

One final piece of **advice**. If you have a problem, **do not wait** until late in the semester before you seek help. Problems that are dealt with early are usually easier to resolve than ones that are left to the last minute.

You may find the following links useful:

- CSE Help Desk: www.cse.unsw.edu.au/~helpdesk
- UNSW Library: info.library.unsw.edu.au
- UNSW Learning Centre: www.lc.unsw.edu.au
- UNSW IT Services for students: www.it.unsw.edu.au/students
- Computer ergonomics: do.cse.unsw.edu.au/students/ergonomics/ergoadjust.html
- Occupational Health and Safety policies and expectations: www.ohs.unsw.edu.au/ohs_students/
- Equity and Diversity issues: http://www.studentequity.unsw.edu.au

6. Plagiarism

All work submitted for assessment **must be your own work**. Lab exercises and assignments **must be completed individually**. We regard copying of assignments or lab exercises, in whole or part, as a very serious offence. **We use plagiarism detection software to search for multiply-submitted work, or work derived from other students or from other sources.** Be warned that:

- the submission of work derived from another person, or jointly written with someone else will, at the very least, result in zero marks for the assignment or lab exercise.
- allowing another student to copy from you will, at the very least, result in a reduction in the mark for your own assignment or lab exercises; and
- severe or second offences will result in automatic failure of the course, or even exclusion from the University.

Collaborative learning in the form of "think tanking" is encouraged, but students are not allowed to compose programming solutions together as a group during such discussions, unless an assignment explicitly allows this. Students are also warned not to send code fragments of the assignments or labs to each other in any form (e.g. as email or listings). In addition, purchasing code from a solution-generating website or service or from a senior student is a very serious kind of academic misconduct.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

> http://www.lc.unsw.edu.au/plagiarism

7. Continual course improvement

Student feedback on this course, and on the lecturing in this course, is obtained via electronic survey (CATEI) at the end of each semester. Student feedback is taken seriously, and continual improvements are made to the course based in part on this feedback. Students are strongly encouraged to let the lecturer in charge know of any problems as soon as they arise. Suggestions and criticisms will be listened to openly, and every action will be taken to correct any issue or improve the students' learning experience.

As a result of recent student feedback we have changed the lecture schedule, allowing additional time for popular topics like Spreadsheets and Data Analysis. We have also introduced online individualised assessment that could facilitate improved regular feedback to students. The programming topics have been restructured and additional supporting resource documents are now provided. This session, both the assignments will be restructured, in order to help students who find assignments particularly challenging.

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