SCSSE

School of Computer Science & Software Engineering
Faculty of Informatics

CSCI124 Applied Programming
Subject Outline
Autumn Session 2008

Head of School – Professor Philip Ogunbona, Student Resource Centre, Tel: (02) 4221 3606

GENERAL INFORMATION

Subject Coordinator

	Mr. Daniel Saffioti
Telephone Number:	4221 4357
Email:	aneesh@uow.edu.au
Location:	3.202

Mr. Saffioti's consultation times during session:

Day	Time
Wednesday	09:30 – 11:30
Friday	15:30 – 17:30

Subject Organisation

Session:	Autumn Session, Wollongong Campus
Credit Points	6 credit points
Contact hours per week:	3 hours lecture; 2 hours laboratory/ 1hr tutorial
Lecture Times & Location:	Wednesday: 11:30 – 12:30 at 3.121
	Friday: 13:30 – 15:30 at 20.LT3
Tutorial Day, Time and Location can be found at:	http://www.uow.edu.au/student/sols/timetables/index.html

changes in assessment requirements will be posted from time to time via e-Learning space http://www.uow.edu.au/student/lol. Any information posted to the web site is deemed to have been notified to all students.

Content

This subject develops a thorough understanding of program design using data structures. It extends CSCI114 and presents pointers, dynamic memory management and exception handling. Other topics include implementation of Sorting and Searching Algorithms including the use of typedefs, void pointers and indexes to generalise algorithms; Implementation of data structures: queues, stacks, linked lists, dequeues, trees; Use of arrays as an implementation structure – hashing, radix sort, heaps and Heapsort; Random Access files and internal I/O; Testing of programs: black and white box testing, and the use of debuggers; Use of multi-file organisation in encapsulation and data hiding, with make files; These concepts will be treated through formal lectures, tutorials, assignments and laboratory sessions employing an object oriented language.

Objectives

On successful completion of this subject, students should be able to:

1. Use memory management and exception handling in software implementation
2. Use dynamic memory allocation to create and maintain dynamic data structures
3. Identify and describe` structured data types, their implementation in C++, and use in problem solving
4. Design, implement, test and debug simple programs
5. Write programs that display a working knowledge of good programming style.

Attendance Requirements:

It is the responsibility of students to attend all lectures/tutorials/labs/seminars/ practical work for subjects for which you are enrolled. It should be noted that the amount of time spent on each 6 credit point subject should be at least 12 hours per week, which includes lectures/tutorials/labs etc.

Attendance Requirements:

Satisfactory attendance is deemed to be attendance at approximately 80%* of the allocated contact hours. Attendance rolls will be kept for lectures, tutorials and laboratories. If you are present for less than 80%* you need to apply for special consideration, otherwise a fail grade will be recorded.

Method of Presentation:

In order to maximize learning outcomes, it is strongly recommended that students attend all lectures.

There will be 3 hours of lectures every week. Lecture notes and other subject resources will be available from the subject's WebCT site at http://vista.uow.edu.au.

There will also be a 1 hour tutorial and 2 hour laboratory class. The tutorial class is designed to drill down on small problems and understand details not covered in lectures. The lab class is designed to give students exposure to the technology. You will be responsible for organizing your own lab and tutorial classes. Both lectures and tutorials have assessable components.

Lectures will be delivered in the sequence specified in the content schedule. Laboratories will follow the lecture topics. Tutorials will be discussion based where students will present the design of their assignments. Regular attendance at lectures, tutorials and laboratories is a requirement for the successful completion of this course. Laboratories start from week two.

Lecture Schedule

A proposed Lecture schedule for the subject is as follows:

WEEK	TOPIC	ASSESSMENT TASKS DUE
1	C++ Revision and Programming Case Study	No Laboratory
2	Program Design Approaches and Structure Compilation Processes Multi File C++ Projects & Make	
3	Testing (Blackbox and Whitebox) Testing Techniques and Debuggers	End of Week 3 Assignment 1 Due
4	Advanced C++ Input/ Output (Random I/O and Internal I/O)	
MID SESSION BREAK – 1 WEEK		
5	Searching and Sorting (Selection Sort, Bubble Sort, Radix Sort, Quicksort and Binary Search)	End of Week 5 Assignment 2 Due
6	Pointers	
7	Pointers, Dynamic Types and Generic Code	
8	Object Based Programming and Classes (Syntax)	End of Week 8 Assignment 3 Due
9	Classes by Example Advanced C++ Concepts (Bits, Error Handling and Namespaces)	
10	Linked List (Single and Double)	
11	Stacks, Queues, Dequeues and Hashing	End of Week 11 Assignment 4 Due
12	Binary Trees Heaps and Heap Sort	
13	Programming Case Studies (Gluing it all together) Revision and other topics leading to CSCI204	End of Week 13 Assignment 5 Due

Changes to the above schedule will be posted via e-Learning space http://www.uow.edu.au/student/lol. Any information posted to the web site is deemed to have been notified to all students.

Subject Materials:

Any readings/references are recommended only and are not intended to be an exhaustive list. Students are encouraged to use the library catalogue and databases to locate additional readings

Textbook(s):

There are no Textbooks for the subject.

References:
The following are REFERENCES for the subject. It is up to you to decide if you need them.

- Savitch, Walter, Absolute C++, Addison-Wesley, 2002

  Malik, D.S., *C++ Programming: From Problem Solving to Program Design*, Thomson Learning, 2002
- Main, Michael & Savitch, Walter, *Data Structures and Other Objects using C++*, 2nd Edition, Addison-Wesley, 2001

  Hubbard, John R., *Data Structures with C++*, Schaum's Outlines, McGraw-Hill, 2000

  Sedgewick, Robert, *Algorithms in C++*, Addison-Wesley Pub. Co., c1992
- Bjarne Stroustrup, *The C++ Programming Language*, 3rd edition, 2000, Addison-Wesley

  Adams, Joel, Leestma, Sanford & Nyhoff, Larry, *C++: An Introduction to Computing*

  Forouzan, Behrouz A. & Gilberg, Richard F., *Computer Science: A Structured Programming Approach Using C++*, 2000, Brooks/Cole
- Friedman, Frank L. & Koffman, Elliot B. *Problem Solving, Abstraction and Design Using C++*, 3rd edition, 2000, Addison-Wesley

Most of these are available from either the UniCentre Bookshop or Library.

Assessment:
This subject has the following assessment components.

ASSESSMENT ITEMS & FORMAT	% OF FINAL MARK	GROUP/ INDIVIDUAL	DUE DATE
10 x Laboratory sessions each worth 2 marks	20%	Individual	Each week from Week 2 – Week 12 (10 weeks total) During Lab time. *Refer to notes below.*
5 x Assignments each worth 6 marks due roughly fortnightly.	30%	Individual	Assignment 1 Due end of Week 3 Assignment 2 Due end of Week 5 Assignment 3 Due end of Week 8 Assignment 4 Due end of Week 11 Assignment 5 Due end of Week 13. *Refer to notes below*
Examination	50%	Individual	Formal Examination Period

Notes on Assessment:
All assignments are expected to be completed independently. Plagiarism may result in a FAIL grade being recorded for that assignment.

Electronic Submission of Assessment Items:
Unless otherwise notified by the subject coordinator, all written assignments must be submitted electronically. Assignments must be submitted using the `submit` program on Unix.

Other Procedures for the submission of assessment items:
IMPORTANT: ALL of the assessment items listed in the above table must be completed successfully in order to pass the subject.

(a)   There will be 5 programming assignments, which will be assessed. Assignment must compile on the platform used in the lab.

(b)   Unless otherwise indicated, assignments are due by Thursday 11:59pm of the week due.

(c)   Assignments are to be submitted electronically via Unix/Linux system before the scheduled time. Submission via email/fax/printed form is not acceptable. Some tasks will require the student to demonstrate C++ programs to the tutor in the laboratory. These tasks will be clearly identified on the instructions on the assignments. Receipts for submitted work are e-mailed to the student and should be kept by the student as evidence of submission. The receipt will contain compilation messages. It is the student's responsibility to ensure that any errors reported are corrected.

(d)   It is student's responsibility to keep a backup of his/her work. There will be no extension granted due to any circumstance related to the failure of students' own equipment.

(e)   Students who copy an assignment may receive **zero** for that assignment. This also covers assignments which may be the product of community effort by several students. Working together is acceptable, but the final coding should be the work of the individual student, as assessment is a measure of your ability. **All students involved in plagiarism will have zero marks for that assessment task.**

(f)   Programs submitted which do not produce the required result cannot be awarded more than half marks. Programs which do not compile due to syntax errors will receive no marks, but may still be commented upon. Proper documentation and program style are needed in the assignments to receive full marks.

(g)   Students must submit lab tasks by the due date. Marks will **ONLY** be awarded if the student attends the lab. All lab tasks must work on the platform used in the lab. These will be marked and returned in the next lab.

Procedures for the return of assessment items:

Lab and tutorial staff will endeavour to return assessment during allocated lab and tutorial time. Marks will be available from the subject website. Students should check the website regularly for changes and updates to subject information together with assessment marks.

Penalties for late submission of assessment items:

Penalties apply to all late work, except if special consideration has been granted. Late submissions will attract a penalty of 1 mark per day including weekends. Work more than 3 days late will be awarded a mark of zero.

An extension of time for the completion of an assignment may be granted in certain circumstances. A request for an extension must be made **before** the due date through SOLS as a special consideration. Submission of the assignment will be opened one week before the due time. **Late assignments will not be accepted without a granted special consideration**. Exact time after which the submitted assignment will not be accepted by the system will be indicated in every assignment specification.

Requests for a Special Consideration should be made electronically by logging on to SOLS at, http://www.uow.edu.au/student/index.html, and following the Special Consideration link. All such requests must be made **prior to** the due date and supporting documentation (e.g. medical certificates) should be lodged with administration. Please note that such requests are not necessarily granted. In particular, no extension will be allowed after model solutions have been released or discussed in class. The following advice, which forms part of the Special Consideration application process, should also be noted.

"Please be aware that your Subject Coordinator(s) may not be able to consider your application for special consideration immediately. If the nature of assistance sought is urgent, or you are seeking a short extension of time to submit your assessment item, please approach your Subject Coordinator directly, soon after submitting the form."

Thus you should not assume your application has been granted. You should discuss the situation with your subject coordinator or lecturer as soon as possible after submitting your application and prior to the due date for the assessment item.

No extensions will be granted for tutorial or lab tasks.

Supplementary Exams

Supplementary Exams will be dealt with in accordance with student academic consideration policy (http://www.uow.edu.au/handbook/courserules/specialconsideration.html) 6.2 Timing of Supplementary Exams.

While the School normally grants supplementary exams when the student does not sit the standard exam for an acceptable reason, each case will be assessed on its own merit and there is no guarantee a supplementary exam will be granted. If a supplementary exam is granted, you will normally be notified via SOLS Mail the time and date of this supplementary exam. You must follow the instructions given in the email message.

Please note that if this is your <u>last</u> session and you are granted a supplementary exam, be aware that your results will not be processed in time to meet the graduation deadline.

Student Academic Consideration Policy

The School recognises that it has a responsibility to ensure equity and consistency across its subjects for all students. Sometimes, in exceptional circumstances, students need to apply for student academic consideration in order to complete all assessable work.

The University applies strict criteria to the granting of academic consideration. Before applying for student academic consideration, students should carefully read the University's policy which can be found at: http://www.uow.edu.au/handbook/courserules/specialconsideration.html

As an example: If a student requires an extension of time for the completion of an assignment this may be granted in certain circumstances. A request for an extension must be made to the Subject Coordinator via SOLs before the due date.

Plagiarism

When you submit an assessment task, you are declaring the following

1. It is your own work and you did not collaborate with or copy from others.
2. You have read and understand your responsibilities under the University of Wollongong's policy on plagiarism.
3. You have not plagiarised from published work (including the internet). Where you have used the work from others, you have referenced it in the text and provided a reference list at the end ot the assignment.
4. Plagiarism will not be tolerated.
5. Students are responsible for submitting original work for assessment, without plagiarising or cheating, abiding by the University's policies on Plagiarism as set out in the University Handbook under University Policy Directory and in Faculty handbooks and subject guides. Plagiarism has led to the expulsion from the University.

Student Academic Grievance Policy

The School aims to provide a fair, equitable and productive learning environment for all its students. The Student Academic Grievance Policy seeks to support the achievement of this goal by providing a transparent and consistent process for resolving student academic grievances.

Any student who has a grievance over a result should obtain a Faculty of Informatics Appeal Against Decision or Action Affecting Academic Experience form from the Informatics Student Enquiry Centre. (http://www.uow.edu.au/content/groups/public/@web/@inf/@faculty/documents/doc/uow017433.pdf) The student should firstly take the form to the marker/lecturer to discuss the matter and, if the student is still not satisfied, s/he should take the next step as outlined on the form.

Once the grievance has been considered by the Faculty, if the student still feels the situation has not been fully resolved s/he may consult the Dean of Students. However, the Dean of Students can have no input into the academic judgment of the lecturer and can only review the grievance to ensure proper procedure has been followed.

Relevant University Policies, procedures and students services:

For more information students must refer to the Faculty handbook, online references or consult the UOW policy in full at http://www.uow.edu.au/handbook/courserules/studacgrievpol.html which contains a range of policies on educational issues and student matters.

This outline should be read in conjunction with the following documents:

Code of Practice - Teaching and Assessment http://www.uow.edu.au/handbook/codesofprac/teaching_code.html	Code of Practice - Students http://www.uow.edu.au/handbook/codesofprac/cop_students.html
Code of Practice-Honours http://www.uow.edu.au/handbook/honourscode.html	Acknowledgement Practice **Plagiarism will not be tolerated:** http://www.uow.edu.au/handbook/courserules/plagiarism.html
Key Dates http://www.uow.edu.au/student/dates.html	Student Academic Consideration Policy: http://www.uow.edu.au/handbook/courserules/specialconsideration.html
Course Progress Policy: http://www.uow.edu.au/student/mrp/index.html	Graduate Qualities Policy: http://www.uow.edu.au/about/teaching/qualities/index.html#_The_new_UOW
Academic Grievance Policy (Coursework and honours students) http://www.uow.edu.au/handbook/courserules/studacgrievpol.html	Non-Discriminatory Language Practice and Presentation http://staff.uow.edu.au/eed/nondiscrimlanguage.html
Occupational Health and Safety http://www.uow.edu.au/about/policy/ohs.html	Intellectual Property Policy http://www.uow.edu.au/handbook/generalcourserules/UOW028651.html
Human Research Ethics: http://www.uow.edu.au/research/rso/ethics/human/	Rules for student conduct and discipline: http://www.uow.edu.au/handbook/generalrules/student_discipline_rules.html
Information Literacies Introduction Program http://www.uow.edu.au/student/attributes/ilip/	Informatics Faculty Librarian, Ms Annette Meldrum, phone: 4221 4637, email: ameldrum@uow.edu.au
Student Support Services: http://www.uow.edu.au/student/services/ Informatics Faculty SEDLO (**Student Equity and Diversity Liaison Officers)** Virginie Schmelitschek, phone 4221 3833, virginie@uow.edu.au	SCSSE SISAT Internet Access & Student Resource Centre http://www.uow.edu.au/informatics/common/uow024466.html
SCSSE SISAT Computer Usage Rules http://www.uow.edu.au/informatics/common/uow024457.html	SCSSE SISAT Subject Outlines http://www.uow.edu.au/informatics/common/UOW030689.html