Description: Advanced Programming in C

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-Nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
<th>Campus</th>
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<tr>
<td>CSC</td>
<td>2400</td>
<td>21301</td>
<td>1, 2003</td>
<td>EXT</td>
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Academic Group: FOSCI
Academic Org: FOS003
HECS Band: 2
ASCED Code: 020103

STAFFING
Examiner: Khaleel Petrus
Moderator: Ron House

PRE-REQUISITES
Pre-requisite: CSC1401 or CSC2403

RATIONALE
All application areas of Applied Computer Science require a sound mastery of advanced programming techniques. This additionally requires a knowledge of basic facts about computers and software. The study and practice of computer programming in a language such as C is ideal to develop these important skills.

SYNOPSIS
This course further develops the basic programming skills that the student has obtained by studying Programming in C course CSC1401 (or equivalent) starting with a mastery of basic programming techniques. Students will study advanced programming methods and related concepts, and will practise these in assignments and practical exercises. This course concentrates only on those aspects of C that are compatible with the advanced object-oriented language, C++, which in turn is similar to the increasingly accepted Java language. Some C++ extensions to C are also introduced.

OBJECTIVES
On successful completion of this course the student should:

- have a good understanding of computer science topics related to programming;
- demonstrate a sound working knowledge of good structured programming techniques;
- be able to use programming as a tool with which to explore and develop ideas;
• demonstrate an awareness of the following concepts: abstract data types, pointers, recursion, scope of identifiers, preconditions and post conditions, input/output processing and other standard C library functions.
• be able to use the data structures: lists, queues, stacks, trees.

TOPICS
Description Weighting (%)
1. Overview of C programming 10.00
2. Functions and Arrays 8.00
3. Pointers and Strings 10.00
4. Software Engineering and Development tools 8.00
5. Formatted Input/Output and Files processing 10.00
6. Derived Data Types: Structure and Unions 8.00
7. Dynamic memory allocation and Dynamic Lists 10.00
8. Data Structures and ADT stacks, queues, trees 12.00
9. Recursion 6.00
10. Searching and Sorting complexity 10.00
11. C topics: understanding complicated declarations, Command-line arguments, scooping and linkage rules, signal handling 8.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED:
Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.
A standard C/C++ compiler. Modern Borland or Microsoft compilers are also acceptable Department of Mathematics and Computing CDROM SET 1, S1 2003 (available from the USQ Bookshop). This CD set contains course material, Windows and Linux Software for this and various other courses.
House, Ron 1994, Beginning with C: an introduction to professional programming, Nelson Thompson Learning, South Melbourne.
(Students should already have this book from studying CSC1401)

REFERENCE MATERIALS
Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Assessment</td>
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<tr>
<td>Private Study</td>
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ASSESSMENT DETAILS

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<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
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<td>PRACTICAL WORK</td>
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<td>03 Mar 2003</td>
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<tr>
<td>ASSIGNMENT 2</td>
<td>100.00</td>
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<td>ASSIGNMENT 3</td>
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NOTES:

- Refer to the Examiner for information about Practical Work dates.
- Examination dates will be available during the Semester. Please refer to the examination timetable when published.

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:
   There are no attendance requirements for this course. However, it is the students' responsibility to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.

2 Requirements for students to complete each assessment item satisfactorily:
   To complete each of the assignments satisfactorily, students must obtain at least 50% of the marks available for each assignment. To complete the examination satisfactorily, students must obtain at least 50% of the marks available for the examination.

3 Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of 20% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
   To be assured of a passing grade, students must complete at least 80% of the practical questions and gain at least 50% of the marks available for each assessment item and gain at least 50% of the total marks available for the course.

5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.

6 Examination information:
In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.

7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of Semester 2, 2003.

8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/SECARIAT/calendar/Part5/ or in the printed version of the current USQ Handbook.

ASSESSMENT NOTES

9 Students who obtain an overall passing mark, but who do not gain 50% of the marks available for the examination, may, at the discretion of the examiner, be granted a supplementary examination.

10 Students will be granted a deferred examination only if they perform satisfactorily in all other assessment items.