**Description: Advanced Programming in Java**

<table>
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<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>4403</td>
<td>20443</td>
<td>1, 2003</td>
<td>EXT</td>
<td>1.00</td>
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**Academic Group:** FOSCI  
**Academic Org:** FOS003  
**HECS Band:** 2  
**ASCED Code:** 020103

**STAFFING**

Examiner: Hua Wang  
Moderator: Yan Li

**OTHER-REQUISITES**

Recommended Pre-requisite: CSC2400

**RATIONALE**

Java is not only an internet language, but also a general purpose object-oriented programming language. Its portability, safety, and simplicity features made it the internet language of choice overnight. It is quickly becoming a programming language that every programmer and computer scientist should know. This course will teach not only the Java programming language, but also the Java programming style and the topics on advanced software design using Java and Java's internet programming.

**SYNOPSIS**

This course covers the techniques of object-oriented programming in Java, and the characteristics of the Java programming language. The language features such as applets, packages, exception handling and multithreading with concurrent programming are discussed. Java graphical user interface and animation tools are important parts of this course. The advanced topics -- network programming and client/server and Remote Method Invocation (RMI) as well as Java Database Connection (JDBC) are introduced with an executable example.

**OBJECTIVES**

On successful completion of this course students will:

- have developed a deep understanding of various object-oriented design techniques;
- be able to develop object-oriented applications in Java;
• be able to design Java applet for internet applications;
• be able to develop current programming applications with multithreading;
• be able to develop Java graphical interfaces and animation tools;
• be able to develop advanced software applications using JDBC and Client/Server technologies;
• be able to understand and use distributed system programming with RMI.

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. OO concepts and structures in JAVA</td>
<td>10.00</td>
</tr>
<tr>
<td>2. Java programming and Advanced data structures</td>
<td>5.00</td>
</tr>
<tr>
<td>3. Threads and concurrent programming</td>
<td>15.00</td>
</tr>
<tr>
<td>4. Java applet programming with security and Multimedia</td>
<td>15.00</td>
</tr>
<tr>
<td>5. Graphical user interface design</td>
<td>15.00</td>
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<tr>
<td>6. Input, output and files</td>
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<tr>
<td>7. Java Database Connectivity (JDBC)</td>
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<tr>
<td>8. Network Client/Server programming</td>
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</tr>
<tr>
<td>9. Distributed system programming with RMI</td>
<td>10.00</td>
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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.

Department of Mathematics & 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. For more information about the CD Sets and their use, please refer to http://www.sci.usq.edu.au/cdrom.

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.

Many other books and tutorials are available on the Internet. We will provide the links to these sites.

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STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Private Study</td>
<td>120</td>
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<tr>
<td>Project Work</td>
<td>50</td>
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ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
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<tr>
<td>PROJECT PROPOSAL</td>
<td>10.00</td>
<td>10.00</td>
<td>Y</td>
<td>04 Apr 2003</td>
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<tr>
<td>PROJECT PROGRESS REPORT</td>
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<td>Y</td>
<td>02 May 2003</td>
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<tr>
<td>ASSIGNMENT 1</td>
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<td>20.00</td>
<td>Y</td>
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<tr>
<td>FINAL PROJECT REPORT</td>
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</tr>
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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:
   Students must submit all assessment items. To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item.

3 Penalties for late submission of required work:
   Assessment items submitted after the due date will be penalised 10% for each day late unless the student can convince the Examiner that such a penalty is not warranted. Students must retain a copy of any item submitted for assessment. This must be produced within five days if required by the Examiner.

4 Requirements for student to be awarded a passing grade in the course:
   To be assured of receiving a passing grade a student must achieve at least 50% of the available weighted marks for the summative assessment items.

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:
   There is no examination in this course.

7 Examination period when Deferred/Supplementary examinations will be held:
   There will be no Deferred or Supplementary examinations in this course.

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 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.

10 In accordance with University policy, the Examiner may grant an extension of the due date of an assignment in extenuating circumstances.

OTHER REQUIREMENTS

1 Note on Project: Students will develop an application or a mini-project using Java. The project will be assessed on Project Proposal (aims and motivation, research plan, 2 pages); Progress Report (progress and revised plan, 5+ pages); Final project report plus coding (10-15 pages).

2 Students need to discuss their project with the Examiner via e-mail.