Description: XML and Semantic Web Services

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
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<tr>
<td>CSC</td>
<td>8409</td>
<td>44372</td>
<td>2005</td>
<td>ONC</td>
<td>1.00</td>
<td>Toowoomba</td>
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Academic group: FOSCI
Academic org: FOS003
Student contribution band: 2
ASCED code: 020199

STAFFING
Examiner: Stijn Dekeyser
Moderator: Ron Addie

OTHER-REQUISITES
Recommended Pre-requisite: CSC3400 and CSC2406 and CSC3405

RATIONALE
Although based on established technology such as SGML, XML is still a rather young technology. Even so, in a very short time span it has found acceptance in a wide field of computer applications. Where one of the original reasons for the emergence of XML was exchange of data, specifically in the context of the Internet, today XML is central in topics such as web content management and delivery, document authoring and exchange, development of mark-up languages for anything from chemicals to user interfaces, and data management, integration and exchange. Furthermore, it is the basis for the ongoing development of the web, both in Web Services, and the Semantic Web. This course looks at XML from all these perspectives, and aims to develop a basis for students to consider this new technology, and of its related tools, in as open a mind as possible, while also looking at its shortcomings.

SYNOPSIS
This course starts with looking at XML from the perspective of data management. As such, we look at the semi-structured data model and contrast it with the relational data model and unstructured data. Then we briefly look at XML from the perspective of document languages, by comparing it to SGML and HTML. In the second module we look at two schema definition languages which enable us to check the validity of XML documents. Next we look at using XML within programming languages, by discussing two parsing techniques for documents. The fourth module studies two query languages widely used in XML tools, namely XPath and XSLT. The latter is contrasted to XQuery in the next module, which looks at native XML databases. Module 6 gives an overview of a selection of markup languages based on XML. Finally, we look at two emerging web developments: Web Services and the Semantic Web, studying such standards as SOAP and RDF.
OBJECTIVES

On successful completion of this course students will be able to:

1. understand and contrast the semi-structured data model with the relational data model and unstructured data;
2. create well-formed XML documents;
3. create DTDs and simple Schemas, and check validity of XML documents with respect to these schemas;
4. understand and contrast DOM and SAX parsers;
5. translate English language query statements to XPath and XQuery expressions;
6. author XSLT style sheets to transform documents into XHTML and other markup languages;
7. understand the use and challenges of XML-based databases;
8. have some knowledge of assorted markup languages;
9. understand and use the concepts behind web services and the Semantic Web.

TOPICS

<table>
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<th>Description</th>
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<tr>
<td>Semi-structured data and XML</td>
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<td>Schema Languages for XML</td>
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<td>Parsing with SAX and DOM</td>
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<td>XML Transformations</td>
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<td>Native XML Databases</td>
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<td>Markup Languages</td>
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<td>Web Services and Semantic Web</td>
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TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at http://bookshop.usq.edu.au click 'Semester', then enter your 'Course Code' (no spaces).

Introductory Book 2005, Course CSC8409 XML and Semantic Web Services, USQ Distance and e-Learning Centre, Toowoomba.

Study Book 2005, Course CSC8409 XML and Semantic Web Services, USQ Distance and e-Learning Centre, Toowoomba.

(The Introductory Book and Study Book are also accessible from the course website and hence do not require to be purchased.)
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>
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<th>ACTIVITY</th>
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<tr>
<td>Laboratory or Practical Classes</td>
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<tr>
<td>Lectures</td>
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<td>Private Study</td>
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<td>Tutorials</td>
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ASSESSMENT DETAILS

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<tr>
<th>Description</th>
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<td>ASSIGNMENT 1</td>
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<td>ASSIGNMENT 2</td>
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<td>20.00</td>
<td>14 Oct 2005</td>
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NOTES

1. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:
   It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and 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 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:
   If students submit assignments after the due date without prior approval then a penalty of 5% 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 receiving a passing grade a student must submit all of the summative assessment items and achieve at least 50% of the available marks for those 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 aggregate of the weighted marks obtained for each of the summative assessment items in the course.

6 Examination information:
   In an Open Examination, candidates may have access to any material during the examination except the following: electronic communication devices, bulky materials, devices requiring mains power and material likely to disturb other students.

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 the semester of the next offering of 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/corporateservices/calendar/part5.htm or in the current USQ Handbook.