The University of Western Ontario  
London, Canada

Department of Computer Science   
  
CS 4411b/9538b – Databases II   
  
**Course Outline – January 2017**

**Calendar Description**

Advanced database topics such as: query optimization and execution; advanced concurrency control and recovery concepts; distributed databases; XML databases; database security and privacy; databases in the cloud; information retrieval.

**Course Description**

Students will study advanced database topics. For many of the topics, we will review traditional (relational) databases, and then apply and extend the ideas to distributed databases. The topics covered are database system architecture, data modeling and database design, design of query languages, query execution techniques, indexing and query optimization, transactions, concurrency control, recovery, database security and privacy. As well, XML data models and XQuery will be covered. Student presentations will cover recent developments in data management in the cloud or other database topics not covered in the lecture materials.

**Prerequisite: Computer Science 3319a/b**

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

**Class Schedule**

Mondays, 12:30 – 2:30, in KB-K103

Wednesdays 1:30 - 2:30, in KB-K106

**Instructor**

    Name: Sylvia Osborn   
Office: MC378  
    Office Hours: contact me after class or by email for an appointment

Phone: 519-661-3992  
    E-Mail: sylvia at csd dot uwo dot ca or osborn at uwo dot ca

**Textbooks**

There is no recommended text book.  A number of text books may be put on reserve in the Taylor library. Papers from the literature will be recommended.

**Lecture Notes**

The lecture notes are in powerpoint.  They will be available on a password-protected web site or on owl.

**Course Website:** [http://www.csd.uwo.ca/Courses/CS4411b](http://www.csd.uwo.ca/courses/CS4411b)

**Lecture Topics**

For most of the following topics, the notes cover the topic first as it relates to relational databases, then to distributed databases and possibly to XML or other types of databases.

* Introduction
* Database Architecture
* Database Design
* Querying
* XML databases
* Query Execution/Optimization
* Concurrency Control
* Recovery
* Database Security and Privacy
* other topics presented by students

**Class Schedule for 2017**

This year students will be responsible to read the lecture slides on their own. Roughly speaking, one lecture each week will be used for student presentations of material they have discovered related to their project, and the other lecture will be used to answer questions about the lecture slides assigned as reading for that week. A detailed schedule will be published on the course web site.

**TA Consulting Hours** (tba)

**Computing Facilities**

For senior courses: Each student will be given an account on the Computer Science Department senior undergraduate computing facility, GAUL.  In accepting the GAUL account, a student agrees to abide by the department's [Rules of Ethical Conduct](http://www.csd.uwo.ca/UnderGrad/ethical.shtml) .

**Email Contact**

We occasionally need to send email messages to the class or to students individually. Email is sent to the UWO email address as assigned to you by Information Technology Services (ITS), i.e. your email address @uwo.ca. It is your responsibility to read this email on a frequent and regular basis, or to have it forwarded to an alternative email address if preferred. See the ITS website for directions on forwarding email.

However, note that email at ITS (your UWO account) and other email providers may have quotas or limits on the amount of space they dedicate to each account. Unchecked email may accumulate beyond those limits and you may be unable to retrieve important messages from your instructors.  Losing email is not an acceptable excuse for not knowing about the information that was sent.

**Student Evaluation**

There will be a project, worth 35%, including a proposal (1%) and a presentation (4%), two assignments worth 10% each, a midterm test worth 15%, and a final exam worth 30%. No electronic devices are allowed when writing the midterm or final.

If for any reason the assignment schedule given above cannot be adhered to, the assignment marks will be pro-rated.

Every effort will be made to have assignments marked and handed back within 3 weeks of the due date, preferably sooner. Midterm exam marks will be available within 2 weeks of the exam at the latest.

**Academic Accommodation for Medical Illness**

* for work representing 10% or more of the overall gradein the course:

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counselling Office of your home faculty as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Academic Counselling Office of your home faculty immediately. For further information please see:

<www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf>

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form for visits to Student Health Services. The form can be found here: <www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf>

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

**Assignment and** **Exam / Test / Quiz Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| Due Date | Item | Description | Weight |
| Jan. 25, 2017 | Project topic | Commitment to project topic | 1% |
| Feb. 6, 2017 | Assignment 1 | Review of a research paper | 10% |
| Mar. 1, 2017 | Midterm Test | Test on lecture slides up to Set 7 | 15% |
| March 13, 2017 | Assignment 2 | XML and XQuery using an XQuery engine of your choice | 10% |
| Throughout the term | Presentation | Of your project | 4% |
| April 5, 2017 | Final project | Written report on your project | 30% |
| Final exam period | Final exam | 2-3 hours, on lecture material | 30% |

Note: these dates may change.

Students requesting a Special Midterm Exam for religious reasons must have notified the course instructor and filed documentation with their Dean's office at least 2 weeks prior to the Midterm Exam. If you miss the midterm exam for any other reason, follow the procedure for Academic Accommodation for Medical Illness given above. If accommodation is approved by your Dean’s office, your Final Exam mark will be reweighted to include the weight of the Midterm Exam.

**Assignments**

Submission of Assignments: Assignments will be submitted on line through owl.  Assignments are due AT NOON (11:59 a.m.) on the due date.

Late penalties will be given on the assignments.

Extensions: If you have serious medical or compassionate grounds for an extension, you should follow the procedure for Academic Accommodation for Medical Illness as given above.

# **Accessibility Statement**

**Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2111 x 82147 for any specific question regarding an accommodation.**

**Support Services**

Learning-skills counsellors at the Student Development Centre (http://www.sdc.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental\_health) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, http://westernusc.ca/services.

The website for Registrarial Services is http://www.registrar.uwo.ca.

**Ethical Conduct**

**Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:** <http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf>.

Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence.

All assignments are individual assignments. You may discuss approaches to problems among yourselves; however, the actual details of the work (assignment coding, answers to concept questions, etc.) must be an individual effort.

The standard departmental penalty for assignments that are judged to be the result of academic dishonesty is, for the student's first offence, a mark of zero for the assignment, with an additional penalty equal to the weight of the assignment also being applied. You are responsible for reading and respecting the Computer Science Department's policy on [Scholastic Offences](http://www.csd.uwo.ca/current_students/undergraduate_students/scholastic_offences.html)  and [Rules of Ethical Conduct](http://www.csd.uwo.ca/UnderGrad/ethical.shtml) .

The University of Western Ontario uses software for plagiarism checking. Students may be required to submit their written work and programs in electronic form for plagiarism checking.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com/>).