



# ALEX BABANSKI

We win by brevity what we often lose by verbal excess.

Search...

Home | Teaching

<b>Course:</b>	CS 4411B/9538B – Databases II
<b>Instructor:</b>	Alex Babanski, Ph.D.
<b>Schedule:</b>	Mon 5:30PM - 8:30PM Physics & Astronomy Bldg, Rm 148
<b>Office Hours:</b>	After class or by appointment.

**Contact E-mail:**  
cs4411@babanski.com

## Course Objectives

This course provides a comprehensive introduction to advanced database topics. Areas covered include database system architecture, data modeling and database design, query execution techniques, indexing and query optimization, transactions, concurrency control, recovery, database security, and object-oriented databases.

## Prerequisites

Moderate programming skills and a basic knowledge of the Linux operating systems are required.

Prerequisites: Introduction to Databases (CS3319A/B).

Strongly recommended courses: Computer Science Fundamentals II (CS1027A/B) and Object-Oriented Design and Analysis (CS3307A/B).

If you are not a CS student or if you are missing one of the requirements, please contact Cheryl McGrath (cheryl at csd.uwo.ca) to discuss your situation.

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.

## Lecture Topics

- Relational Databases
- Data Storage and Querying
- Functional Dependencies and Normalization
- Transaction Management
- Database System Architectures
- Big Data and NoSQL Databases
- Specialty Databases
- Integrity and Security

Lecture notes, assignments, labs and other info will be posted on the course webpage. Students are responsible for reading this information frequently. Reading lecture notes is not a substitute for attending lectures.

## Textbook

There is no required textbook for the course. For reference, students can use the following books:

- Database Systems: The Complete Book (Garcia-Molina, Ullman, and Widom)
- Database Management Systems (Ramakrishnan and Gehrke)
- Fundamentals of Database Systems (Elmasri and Navathe)
- Foundations of Databases: The Logical Level (Abiteboul, Hull, and Vianu)
- Principles of Distributed Database Systems (Ozsu and Valduriez)
- Transaction Processing (Gray and Reuter)
- Data and Knowledge based Systems, Volumes I and II (Ullman)
- Data on the Web (Abiteboul, Buneman, and Suciu)
- [Readings in Database Systems](#) (Bailis, Hellerstein, and Stonebraker)
- Proceedings of SIGMOD, VLDB, ICDE, and CIDR conferences

## Student Evaluation

- Assignment 1 (Due 02/12): **10%**
- Assignment 2 (Due 03/12): **10%**
- Assignment 3 (Due 03/26): **10%**
- Midterm Exam (On 03/05): **30%**



- Final Project (Due 04/06): **40%** (8% proposal, 12% presentation and 20% report)

**To pass the course you must achieve a 50% weighted average across the midterm and the final project and at least 50% overall in the course.**

Dates are tentative and subject to change. All assignments are individual assignments. You may only discuss approaches to problems among yourselves.

The final project is meant to be a substantial independent research or engineering effort related to topics discussed in the course. Your project may involve a comparison of database systems, an application of database techniques to different problems, a database-related project in your research area, etc.

### Midterm

- No electronic devices (phones, iPods, etc.) may be in your possession during tests and exams, even for timekeeping purposes.
- There will be no makeup midterm exam. If you miss the Midterm Exam and present valid documentation to the Dean's office, your final mark will be reweighed to include the weight of the midterm exam. You must notify the course instructor within a week of the missed midterm exam, and documentation must be received by your academic counselor in your Dean's office within 2 weeks of the missed exam.
- Any appeals of midterm marks should be addressed to the course instructor.
- Appeals must occur within 2 weeks after the first day that the marked midterm was made available to students. After the 2 week period has gone by, no more appeals will be considered.

### Final Exam

There is no final exam for this course.

### Assignment Guidelines

- Assignment descriptions and requirements will be posted on the course website. Any changes, updates, and clarifications to assignments will also be posted on the website. It is your responsibility to monitor the course website closely.
- Your assignment solutions are expected to be your own individual work, not the products of group effort. On occasion, you may be allowed to make use of code, images and files from an outside source, such as your textbook. You are expected to give proper credit for any and all borrowed material.
- Assignments will be submitted electronically. Details will be given on the course website and/or in the assignment descriptions.
- Some non-programming portions of assignments may have to be handed in on paper. Details will be given on the course website and/or in the assignment descriptions.
- When assignment marking has been completed, you will be informed via the course website and/or email.
- A request for adjustment in an assignment mark must be made within 2 weeks of the date on which it was first available for pickup. Any requests for mark adjustments after those two weeks will not be granted and the mark will be considered final. Any requests for mark adjustments must be submitted via email or during office hours and must include specific reasons why you believe you deserve more marks. Even if you request a remark because you disagree with one portion of the mark, your ENTIRE assignment will be remarked again and you may end up with a lower mark that you were given initially (if more problems are found). If this occurs, the new lower mark will be final and you will have no recourse to go back to the original mark.
- A small portion of the mark may be subjective, for example: colors, image quality and creativity. This part of the mark will not be adjusted after the mark is given.
- It is your responsibility to keep up-to-date backups of assignment files in case of system crashes or inadvertently erased files. Keep copies of all material handed in, as well as the actual graded assignment, to guard against the possibility of lost assignments or errors in recording marks.
- The marks for all assignments, except for the final project, will be posted by the end of the term. It is your responsibility to ensure that the marks posted are correct.

### Late Assignments

- A late assignment will have a penalty of 10% of the maximum mark for the assignment deducted for each day (1-24 hours from the due time) that the assignment is late.
- Saturday/Sunday count as one day for the purpose of assessing the late penalty.
- An assignment that is more than five days late will not be accepted.
- No extensions will be given for assignments (no exceptions!). In the event of serious medical or compassionate grounds, a student should contact the course instructor and follow the procedure for Academic Accommodation for Medical Illness.

### Equal Opportunity and Evaluation Policy

The university is committed to academic integrity and has high ethical and moral standards. All students will be treated equally and evaluated using the criteria presented in this course outline and their respective weights. The evaluation criteria are based strictly on actual achievement, not on effort or how hard the student tried.

Claims of an excellent academic history, of attendance in the course components, or of personal issues (family, relationship, financial, etc.) cannot be used to justify a higher grade in the course because they are not criteria for evaluation. There is no extra work available for extra credit or to "make up" another grade. We do not offer any extra assignments, essays, experiments, or other work of any kind to any student.

The requirement for a higher grade in order to, for example, maintain a scholarship, enter a program, or obtain a higher GPA for various reasons, is not a justifiable reason for increasing your grade. If we increased or "bumped" your grade (i.e. gave you a grade that you did not legitimately earn), it would be unfair to the other students and also a great disservice to the scholarships and programs who are evaluating all students on the basis of their grades.

### Accommodation and Accessibility

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to your Dean's office or the Academic Counselling Office of your home faculty as soon as possible and contact your instructor immediately. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in WSC 140, and can be contacted at [scibmsac@uwo.ca](mailto:scibmsac@uwo.ca).

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 midterm or final exam, a "Recommendation of Special Examination" form must be obtained immediately from the Dean's Office or your faculty's Academic Counselling Office.

For further information please consult the university's policy on [Accommodation for Illness](#).

### Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>. In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

## Western Support Services

Western has many services and programs that support the personal, physical, social and academic needs of students with disabilities. 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 661-2111 x 82147 for any specific question regarding an accommodation.

For further information please consult the university's policy on [Academic Accommodation for Students with Disabilities](#).

Students who are in emotional/mental distress should refer to [Mental Health @ Western](#) for a complete list of options about how to obtain help.

Student will not be penalized for absence because of religious reasons, and alternative means will be sought for satisfying the academic requirements involved.

For further information please consult the university's policy on [Accommodation for Religious Holidays](#).

## SDC's Learning Skills Services

LSS counsellors 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.

For more information please visit <http://www.sdc.uwo.ca/learning>.

## Scholastic Offences and Rules of 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](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the 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

Computer-marked, multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Plagiarism: Students must write their assignments / project reports 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 (see Scholastic Offence Policy in the Western Academic Calendar).

Sometimes students commit plagiarism without being fully aware they are doing so. It is each student's responsibility to become informed about what constitutes plagiarism and to take steps to avoid committing this scholastic offence by learning how to make proper use of sources. If you are uncertain about how to acknowledge sources you have used, consult your instructor before submitting the assignment.

Assignments that are judged to be the result of academic dishonesty will, for the student's first offence, be given a mark of zero. You are responsible for reading and respecting the policy on Scholastic Offences and Rules of Ethical Conduct.

The Office of the Ombudsperson at Western publishes useful guides that will help you avoid committing a mistake of this nature that could have serious consequences: <http://www.uwo.ca/ombuds/>.

## Important Legalities

It is Faculty of Science policy that students who choose to write a test or exam deem themselves fit enough to do so, and must accept the mark obtained. Claims of medical, physical, or emotional distress after the fact will not be considered. There is no opportunity for a re-weight of the other course components after the test or exam has been written. The reason of "I did not want to write a heavily weighted test" is not a valid reason for writing the test while ill.

It is university policy that a regularly scheduled class (lecture, lab, or tutorial) takes precedence over tests and exams. Therefore, if another course schedules a test or exam that takes place during your lab or tutorial, the instructor for that course must accommodate you.

## E-mails / Questions via E-mail

You are encouraged to contact the course instructor via email, with brief, appropriate questions regarding lecture material or clarification of assignments. However, please check the course website for answers to frequently asked questions, or to see if the information is already there, before emailing the instructor. Note: You must send email only from your UWO account (i.e., your email address @uwo.ca). You must include course number in the subject line (i.e., CS4411B/9538B). All the other emails will be filtered out. Please send emails only in plaintext format. All emails will be answered in 72 hours.

## Disclaimer

**This syllabus is subject to change based on the needs of the class. Any changes will be announced in the class and reflected on the website.**

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Tuesday January 9th, 2018.

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