

## Introduction to Databases: CS3319

## Western University

London Ontario

Department of Computer Science

CS 3319 Databases I &amp; CS3120 &amp; Digital Humanities 3320a Databases for Informatics

Course Description - Fall 2015

## Course Description

- This course introduces the student to database management systems. The course discusses how to design a database for a real application. Design of good relational tables is followed by the use of these tables. The standard SQL data manipulation language will be used. This will be contrasted to other languages. Following the logical design phase, we discuss issues of physical storage structures and indexes. Finally, issues of backup and recovery, concurrency control and data distribution will be introduced.
- The intent is to prepare students to design a useful database for a small enterprise. Students should have a basic grounding in all the fundamentals of the field. They should be ready to understand the more complex issues.

**Prerequisites:** Computer Science 2210A/B and Computer Science 2211A/B.

**Antirequisites:** Software Engineering 3352A/B

- Unless you have either the requisites for this course or written special permission from your Dean to enrol 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.

## Instructor

- Name: Laura Reid
- Office: Middlesex 416
- Office Hours: Mondays: 2-3pm and Tuesdays:2:30-3:30pm
- Email: lreid@csd.uwo.ca

## Textbook, Lecture Notes

- **Required Textbook:** Fundamentals of Database Systems, Seventh Edition. Elmasri & Navathe, Addison-Wesley Publishers, 2011. (The Fifth or Sixth Edition is also OK, as the chapters we use have not changed much, they've just moved the chapters around.) – a copy will be put on 1-day reserve in Taylor Library
- **Lecture Notes:** See OWL

## Course Website

- See OWL - Please check the announcements section of OWL and your email at least every 48 hours: ***It is your responsibility not to miss any announcements or class emails.***

## Lecture Topics:

- **Topic 1** - Introduction, ER Diagrams
- **Topic 2** - Network Model, Hierarchical Model, Relational Model
- **Topic 3** - Physical Data Access Methods --> Hashing Techniques, Indexes
- **Topic 4** - Relational Algebra
- **Topic 5** - SQL
- **Topic 6** - Relational Calculus, QBE
- **Topic 7** - Converting EER Diagrams to relations
- **Topic 8** - mysql, PHP, Java Database Connections, Assignment 3 Information
- **Topic 9** - System Catalog, Database Security, Triggers
- **Topic 10** - Functional Dependencies and Normalization
- **Topic 11** - Transaction Processing, Concurrency Control, Recovery Techniques
- **Topic 12** - Query Processing and Optimization

**NOTE: the above schedule is subject to change depending on timing.**

## Class Times and Location:

- **Tuesdays 1:30pm-2:30pm, Thursdays 12:30pm-2:30am, in SEB2200**

**TA Consulting Hours:**

- To Be Announced

**Student Evaluation and Schedule:**

Evaluation	Description	Weight	Due Date and Time
Assignment 1	Concept assignment. It can be hand written as long as it is neat. Then it must be scanned (or you could take photos with a digital camera/phone of each page and put the photos together into one pdf file) and then it must be submitted via OWL	8%	6pm, Friday, October 9
Assignment 2	Building a database at the command prompt, writing SQL statements and running them. Scripts submitted to OWL.	9%	6pm, Friday, November 13
Assignment 3	Building a database, writing Java code to connect to the database. Code submitted to OWL.	12%	6pm, Friday, December 4
5 Quizzes	Multiple choice short (about 20 minutes) quizzes that review the previous 2 weeks worth of material	16% (each worth 4%)	During class time in the following classes: <b>Sept 29, Oct 6, Oct 20, Nov 10, Nov 24</b>
Midterm Exam	Short Answer/Multiple Choice, 1 Review Sheet allowed during the exam.	20%	During class time on <b>Thursday, November 5</b>
Final Exam	Short Answer/Multiple Choice, 1 Review Sheet allowed during the exam.	35%	TBA
<b>Note: This schedule/weighing is subject to change.</b>			

**Exam and Quiz Information:**

**Midterm/Final Exam Info:**

- Final Exam: TBA
- Any appeals of midterm and/or final marks should be addressed to the lecturer
- 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.
- On both the midterm and the final exam, students are allowed to bring in one 8 1/2 by 11 inch review sheet.
- There will be no makeup midterm exam, except for students requesting a special midterm exam for religious reasons. These students 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, and present valid documentation to the Dean's office, your final exam 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 counsellor in your Dean's office within 2 weeks of the missed exam.

**Quiz Rules:**

- There are 5 Quizzes: Each will be a multiple choice quiz, USUALLY AT THE END (but could be any time during the class period).
- The quiz can either be completed on line OR using a scantron. When using the scantron, the scantron must be filled in correctly on all quizzes (no pens, colour darkly in an HB pencil, complete the exam code, etc...). On quiz 1, any mistakes on filling in the scantron will not be penalized, after quiz 1, the following formula will be used to penalize student who cannot fill in an exam code and force the lecturer to go through each scantron:  $(\text{Quiz } N - 1) * 5$  deducted off your quiz mark. Thus on quiz 3 you would lose  $\text{quiz } 3 - 1 = 2 * 5 = 10\%$  if you filled in your scantron incorrectly.
- Your lowest quiz mark is dropped, thus **NO** excuses will be accepted for missing a quiz!
- Each quiz is worth 4%
- If you miss a quiz, you will receive 0.
- If you are caught cheating on a quiz, you will receive - (NEGATIVE) 4% and the incident will be reported to your Dean's office.
- Your lowest quiz mark will be dropped so you can miss one quiz without any penalty.

### Assignment Information:

- **Handing In Assignments:** All assignments are to be submitted using OWL, assignment instructions will contain submission details.
- **Late Assignment Policy:**
  - 5% per day late will be deducted; no assignments more than 3 days late will be accepted. The weekend will count as 1 day, so you will only lose 5% if you hand it in by Sunday at 6pm. The last possible date to hand in the assignments will always be the following Tuesday at 6pm.
  - **NO** reasons are ever considered for late assignments except for notifications from the Academic Counsellor in your Dean's Office.
  - System problems after the due date are NEVER considered as grounds for an extension (i.e. during the 3 days during which you can still hand in a late assignment)
- **Grading of Assignments:**
  - T.A.s will attempt to have assignments marked within 2 weeks of the last possible date to submit the assignment
  - Appeals of assignment marks should be addressed to the T.A. first. If you and the T.A. cannot agree then the T.A. will discuss the situation with the lecturer.
  - Appeals must occur within 2 weeks after the first day that the marked assignments were made available to students. After that 2 week period has gone by, no more appeals will be considered.
- **Cheating Policy:**
  - The first time you are caught cheating on an assignment, you will receive NEGATIVE 100% for the assignment and the Dean of Science will be notified. The Dean will mark this offence in your file. The second time you are caught cheating you will be removed from the course, and the Dean of Science will be notified again and your file will be marked.
  - Giving your code to someone else is considered as much a violation of the cheating policy as taking code from someone so NEVER give your code to another student and protect your code (don't leave memory sticks lying around in the labs, etc.)
  - Working together is encouraged as it promotes learning, so you can help or ask other students for help, just never ever cut/copy and paste code, always discuss and explain but do not email code to someone else.
- **Extensions:**
  - Extensions may be granted only by the course instructor. If you have serious medical or compassionate grounds for an extension, you should follow the procedure for Academic Accommodation for Medical Illness as given below.

**REMEMBER:** No excuses for missed quizzes, late assignments or missed exams will be accepted under any condition without official notice from the Dean of Science's office!

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### EMAIL CONTACT

We will occasionally need to send email messages to the whole class or to students individually. Email will be sent to the Western email address assigned to students by Information Technology Services (ITS). It is each student's responsibility to read this email on a frequent and regular basis, or have it forwarded to an alternative email address if preferred. See the ITS web site for directions on forwarding email. You are responsible for checking your email at least every 72 hours as this will be instructors main method of communicating with the students outside of lectures.

However, you should note that email at ITS (your Western account) and other email providers such as hotmail.com or yahoo.com may have quotas or limits on the amount of space they can use. If you let your email accumulate there, your mailbox may fill up and you may lose important email from your instructors. Losing email that you have forwarded to an alternative email address is not an excuse for missing out on important information.

You are encouraged to contact the course instructor via email, with brief, email appropriate questions regarding lecture material or clarification of assignments. However, please check the course web site for answers to frequently asked questions, or to see if the information is already there, before emailing the instructor.

Note: You must send email from your Western account, and start the subject line with **CS3319** followed by whatever else you want to put in the subject line. Other email may be filtered out. Please send email in plain text format.

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### IMPORTANT LEGALITIES

It is Faculty of Science policy that a student who chooses to write a test or exam deems themselves fit enough to do so, and the student 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 reweight 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 final" is not a valid reason for writing the midterm 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. No electronic devices (phones, iPods, etc.) may be in your possession during tests and exams, even for timekeeping purposes.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this website:

[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).

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

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## EQUAL OPPORTUNITY AND EVALUATION POLICY

We want you to do well in the course, but we also have to be fair. 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

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## TUTORING

The role of tutoring is to help students understand course material. Tutors should not write part or all of an assignment for the students who hire them. Having employed the same tutor as another student is not a legitimate defense against an accusation of collusion, should two students hand in assignments judged similar beyond the possibility of coincidence.

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## COMPUTING FACILITIES

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](#).

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## ETHICAL CONDUCT

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 your individual effort.

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 (see Scholastic Offence Policy in the Western Academic Calendar).

Assignments that are judged to be the result of academic dishonesty will, for the student's first offence, be given a mark of zero 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 and Rules of Ethical Conduct.

The University of Western Ontario uses software for plagiarism checking. Students will be required to submit their programs in electronic form for plagiarism checking. Students will be required to submit their programs in electronic form for plagiarism checking. Also, references will be requested when downloading images from the Internet for assignments.

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## ACADEMIC ACCOMMODATION FOR MEDICAL ILLNESS

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 your academic counselling unit for 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 unit for your home faculty immediately. For further information please see: <http://www.uwo.ca/univsec/handbook/appeals/medical.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 (located in the academic counselling unit for their home faculty) for visits to Student Health Services. The form can be found here: [https://studentservices.uwo.ca/secure/medical\\_document.pdf](https://studentservices.uwo.ca/secure/medical_document.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.

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## **STUDENT SERVICES**

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>.

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## **CLASSROOM AND COURSE ACCESSIBILITY**

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.

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## **SDC's LEARNING SKILLS SERVICES**

WSS Room 4100 - [www.sdc.uwo.ca/learning](http://www.sdc.uwo.ca/learning) LS counsellors are ready to help you improve your learning skills. We 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.