Introduction to Databases: CS3319

Western University

London Ontario
Department of Computer Science

CS3319a & CS3120a & Digital Humanities 3320a cross-listed with CS9159a/b
Introduction to Databases
Course Description - Fall 2020

1. COURSE INFORMATION

- This course introduces 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. 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 programming.
- This year the course will be completely online. The lectures are all videos which you must watch online on your own time. We will only meet as a class every TWO weeks do work on in class practice exercise questions (FLIPPED CLASSROOM STYLE). Students MUST come to the 5 scheduled flipped classroom dates prepared (i.e. have watched the video lectures and completed the required quiz) but are not required to come to class any of the other times.Marks are given towards your final grade for attending these flipped classroom sessions!

Prerequisites: Computer Science 2210A/B and Computer Science 2211A/B OR Computer Science 2121A/B OR Digital Humanities 2221A/B OR enrollment in the MDA program

Antirequisites: Software Engineering 3352A/B

- Unless you have either the prerequisites for this course or written special permission from your academic counsellor, you will be removed from this course. 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.

2. INSTRUCTOR INFORMATION

- Name: Laura Reid
- Office: Normally Middlesex College 416 --- this year: her basement!
- Office Hours: VIRTUALLY ON ZOOM --> Mondays: 1-2pm and Tuesdays:2:30-3:30pm
- Email: lreid@csd.uwo.ca

3. SCHEDULE AND DELIVERY MODE

Lecture Topics:

- **Week 1 Topics** - Introduction, ER Diagrams
- **Week 2 Topics** - Network Model, Hierarchical Model, Relational Model
- **Week 3 Topics** - Physical Data Access Methods --> Hashing Techniques, Indexes
- **Week 4 Topics** - Relational Algebra
- **Week 5 Topics** - SQL and Setting Up Your Virtual Machines
- **Week 6 Topics** - Relational Calculus, QBE, Converting EER Diagrams to the Relational Model
- **Week 7 Topics** - MySQL, PHP, JavaScript, HTML, CSS - Assignment 3 Information
- **Week 8 Topics** - System Catalog, Database Security, Triggers and Stored Procedures
- **Week 9 Topics** - Functional Dependencies and Normalization and Query Optimization
- **Week 10 Topics** - Transaction Processing, Concurrency Control, Recovery Techniques
- *NOTE: the above schedule is subject to change depending on timing.*

Class Times and Location:

- All lectures are recorded and online. In Owl, select *Week By Week* along the left side and select each week to watch the lecture videos.
- **YOU MUST COME TO VIRTUAL ZOOM CLASSES FOR THE FLIPPED CLASSROOMS - the 5 Virtual Flipped Classroom times are roughly every other Tuesdays from 11:30am-1:30pm, SEE DATES BELOW.**
- The 5 QUIZZES are roughly every other Monday. The Owl quiz will be open from 11AM till 1PM. You will get about 30 minutes to complete the Owl quiz. SEE DATES BELOW.

TA Consulting Hours:

- To Be Announced

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4. COURSE MATERIALS

- **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.)
- **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.*

5. METHODS OF EVALUATION

Student Evaluation and Schedule:

Evaluation	Description	Weight	Due Date and Time
Assignment 1	Concept assignment. Use Draw.io or MS Visio. 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%	11:55pm, Friday, October 9
Assignment	Building a database at the command prompt, writing SQL	10%	11:55pm, Friday, October 30

2	statements and running them. Scripts submitted to OWL.		
Assignment 3	Building a database, writing JavaScript and PHP to connect to the database. Code submitted to OWL.	15%	11:55pm, Friday, November 27
Virtual Machine Setup	Setting up your virtual machine and testing MySQL and BitBucket - CANNOT BE LATE	1%	11:55pm, Wednesday, October 14
PHP Setup	Writing some PHP code that creates a web page that talks to your database - CANNOT BE LATE	1%	11:55pm, Sunday, October 25
5 Quizzes	Multiple choice short (about 20-30 minutes) quizzes that review the previous 2 weeks worth of material	15% (each worth 3%)	The Monday class BEFORE the Flipped Classroom Sessions classes (available from 11:00 AM till 1:00PM on the following Monday class times Sept 21, Oct 5, Oct 19, Nov 9, Nov 23)
5 Flipped Classrooms	You are required to come to 5 virtual classes and you will be put into groups of 3. Your group of 3 must complete a worksheet and mark another group's worksheet. The 5 dates that you are required to attend the virtual flipped classroom meetings are: 11:30am - 1:20pm are given to the right --> ONLINE Attendance is MANDATORY for these 5 dates!	10% (each worth 2%)	Tuesday, September 22, Tuesday October 6, Tuesday, October 20, Tuesday, November 10 and Tuesday, November 24 at 11:30am-1:20pm
Final Exam	Short Answer/Multiple Choice, 1 Review Sheet allowed during the exam.	40%	TBA
Note: This schedule/weighing is subject to change.			

Exam and Quiz Information:

Final Exam Info:

- Time, Date and Room:TBA
- Students are allowed to bring in one 8 1/2 by 11 inch review sheet that has writing on both sides (typed or handwritten, either is fine)..
- Students must get at least 30% on the final exam to pass the course and at least 40% on the final exam to get over 60% in the course.

Quiz Rules:

- There are 5 Quizzes: Each will be a multiple choice quiz.
- The quiz will be given the day before the flipped classroom to ensure that you arrive at the flipped classroom prepared and ready to contribute to your group during the flipped classroom.
- The quizzes will be open (available for you to complete) on the given Monday above between 11AM and 1PM.
- The quizzes should take approximately 30 minutes, you MUST be done the quiz by 12:55pm, so make sure you have started it by about 12:25pm.
- Once you start the quiz, you have 30 minutes from the start time.
- The quiz will be delivered online via OWL.

- Each quiz is worth 3%
- If you miss a quiz without reason (i.e. it was not approved by your academic counsellor), you will receive 0
- If you have a valid reason (approved by your academic counsellor) for missing a quiz, you will receive whatever mark you get on the final exam as the mark for the missed quiz.
- If you miss a quiz and use a Self Reported Absence (SRA) for missing the quiz, the weight of the quiz will be moved onto your final exam.

Group Work Information:

You may pick a group of 3 for this course using Owl or you may select a random group via Owl. The random group will be open till 3 people join it. This will be your group for the entire term.

Flipped Classroom Rules (done in groups of 3):

- Each flipped classroom is worth 2% of your final grade.
- You will be put into random groups of 3 via Owl or you can create a group with your friends. This will be your group for the entire term. MDA 9159 students MUST work together (you must be in the a group with other MDA students)
- There are 5 flipped classrooms, approximately one every 2 or 3 weeks. See dates above.
- These 5 dates are the ONLY dates where we will meet together in the virtual classroom. All other work (lecture videos, assignments, quizzes) is done on your own time.
- Make sure you have your laptop ready (charged with Internet access) and make sure you have your cell phone ready as backup
- You will work virtually with your group and be given ONE worksheet PER group. Your group must answer the questions on the worksheet.
- After an allotted amount of time, groups will switch paper with other groups and we will mark the worksheets together.
- Then you will enter a grade into Owl for the group whose paper you marked. (1 mark for attending the class and 1 mark for getting over 50% on the worksheet).
- If you have a valid reason (approved by your academic counsellor) for missing a flipped classroom, you will receive whatever mark you get on the final exam as the mark for the missed flipped classroom.
- If you miss a flipped classroom and use a Self Reported Absence (SRA) for missing the quiz, the weight of the flipped classroom will be moved onto your final exam.
- This is my first year doing the flipped classroom online so please be patient with me as I figure out the best software to use to complete the flipped classrooms.

Assignment Information:

- **Handing In Assignments**: All assignments are to be submitted using OWL, assignment instructions will contain submission details.
- **Late Assignment Policy for the 3 individual assignments**:
  - 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 11:55pm. The last possible date to hand in the assignments will always be the following Tuesday at 11:55pm.
  - **NO** reasons are ever considered for late assignments except for notifications from the Academic Counsellor in your Dean's Office or a Self Reported Absence.

- If you use a Self Reported Absence for your assignment(s), you will get a 48 hour extension on the assignment.
  - System problems near or 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 0% for the assignment AND the Dean of Science (and, if you are not a Science student, your Deans office) 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 more severe consequences (such as being removed from the university) will be applied. It is better to hand in a partially finished assignment or a late assignment and get some marks than to cheat and get 0.
  - 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/give code to ANYONE!.
- **Extensions:**
  - Extensions may be granted only by the course instructor, not the t.a.s. Extensions will only be given if we hear from your Academic Counsellor. 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 unless you use a Self Reported Absence. See above for how Self Reported Absences are dealt with depending on what you using it for.

ACCESS TO LAB ROOMS IN MIDDLESEX COLLEGE

After-hours access to Computer Science lab rooms is by student card. If a student card is lost, you will need to visit the Student Services Building to obtain a replacement. As of 2018, the cost for a replacement card is $25. More information is available at https://www.registrar.uwo.ca/services/western_onecard_and_photo_standards.html

Students enrolled in Computer Science courses will be granted access to the labs within 7 days of enrollment. If you do not have access to the labs after 7 days, please open a ticket with Science Technology Services at https://helpdesk.sci.uwo.ca.

COVID19 Update: Middlesex College labs should be open from September to December. If you decide to work in the building you MUST wear a mask and you MUST sit 6 feet away from all other students. NOTE: depending on

the health situation of the province of Ontario, the use of lab rooms MAY change during the term

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.

6. ACCOMMODATIONS AND ACCESSIBILITY

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The Academic Accommodation for Students with Disabilities policy can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf

Academic Consideration for Student Absence

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the semester, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student's final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs, see:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf

and for the Student Medical Certificate (SMC), see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar:

https://multiculturalcalendar.com/ecal/index.php?s=c-univwo

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See Academic Calendar for details (under Special Examinations).

7. ACADEMIC POLICIES

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

In accordance with policy, https://wts.uwo.ca/identity/identities_and_access/index.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.

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.

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.

Tests and examinations in this course will be conducted using the remote proctoring service, such as Proctortrack. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. More information about this remote proctoring service is available in the Online Proctoring Guidelines at the following link:

https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf

Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. Information about the technical requirements are available at the following link:

https://www.proctortrack.com/tech-requirements/

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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8. SUPPORT SERVICES

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: https://www.uwo.ca/sci/counselling/

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessibility Services (SAS) at (519) 661-2147 if you have any questions regarding accommodations.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: https://www.uwo.ca/se/digital/.

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.