

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 2019

Course Description

- 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 is the second time that this course will be offered as a BLENDED course. 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.

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.

Instructor

- Name: Laura Reid
- Office: Middlesex 416
- **Office Hours: Wednesdays: 2-3pm and Tuesdays: 1:30-2:30pm**
- 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:

- **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:

- **Tuesdays 11:30pm-1:30pm, Thursdays 12:30pm-1:30am, in TC-141**

TA Consulting Hours:

- To Be Announced

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	7%	11:55pm, Friday, October 4
Assignment 2	Building a database at the command prompt, writing SQL statements and running them. Scripts submitted to OWL.	9%	11:55pm, Friday, November 1
Assignment 3	Building a database, writing JavaScript and PHP to connect to the database. Code submitted to OWL.	13%	11:55pm, Friday, November 29
Virtual Machine Setup Assignment	Setting up your virtual machine and testing MySQL and BitBucket	1%	11:55pm, Wednesday, October 16
PHP Setup	Writing some PHP code that creates a webpage that talks to your database	1%	11:55pm, Sunday, October 27
5 Quizzes	Multiple choice short (about 20 minutes) quizzes that	12% (each	The Thursday class BEFORE

	review the previous 2 weeks worth of material (lowest will be dropped)	worth 3%)	the Flipped Classroom Sessions classes (available from Noon to 2:00pm on the following Thursday afternoon class times Sept 19, Oct 3, Oct 17, Oct 31, Nov 21)
5 Flipped Classrooms	You are required to come to 5 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 come to class are: 11:30am are given to the right --> Attendance is MANDATORY for these 5 dates!	10% (each worth 2%)	Tuesday, September 24, Tuesday October 8, Tuesday, October 22, Tuesday, November 12 and Tuesday, November 26 at 11:30am-1:20pm
3 Minute Group Video	You and your group must create a video that is at least 2.5 minutes but not more than 4 minutes that explains an assigned database concept in layman's terms. Then your group must watch 10 other groups videos and mark each of those videos. Your group's mark will be the average mark given to you by the groups that watched your video.	7% (4% for the video and 2% for grading some of the other videos and 1% for peer assessment)	Video is due Friday, November 22 at 11:55pm. The marking of the other videos is due Tuesday, Dec 3 at 11:55pm. Your peer evaluations are due Tuesday, Dec 3 at 11:55pm.
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 week 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 Thursdays above between noon and 2pm.
- The quizzes should take approximately 30 minutes, you MUST be done the quiz by 1:55pm, so make sure you have started it by about 1:25pm.
- Once you start the quiz, you have 30 minutes from the start time.
- The quiz will be delivered online via OWL.
- Your lowest quiz mark is dropped, thus **NO** excuses will be accepted for missing a quiz!

- 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.

Group Work Information:

You may pick a group of 3 for this course or you will be put into random groups of 3 via Owl. This will be your group for the entire term.

Flipped Classroom Rules (done in groups of 3):

- You will be put into random groups of 3 via Owl. This will be your group for the entire term.
- 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 assigned classroom. All other work is done on your own time.
- Try to bring a laptop to class that day (and your cell phone)
- You will sit 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).

3 Minute Group Video Rules:

- Worth 7% of your final grade
- Each group will be given one small database topic by the instructor.
- Your group must create a video that explains this topic well and illustrates the importance of this topic
- You may use any software tools you wish to create the video (you can video tape each other, do screen captures, do a puppet show, whatever you want as long as you explain the concept clearly)
- The video must be at least 2 minutes but not more than 4 minutes
- The video must be an .mp4 file.
- Since we will only use the classroom during the 5 dates above the 5 flipped classes, your group may use any of our regular class times (and even our classroom as your workspace) except for our 5 flipped classes to create your video.
- You must then post your video on YouTube and you must upload the link to that location in Owl
- You will received a mark out of 4% for that video. This will be done by peer marking. 8 -10 other groups will watch your video and give a grade.
- Your group will then be assigned 10 other videos to watch and your group must mark each of those 10 videos (I will give you simple rubric to use when marking each video where the main categories to score the videos will likely be: clarity, relevance and creativity)
- You will get 2% for marking the other 10 videos (if you only mark 9 of the videos, you will get 0, your group must mark all 10 videos to get this 2%)

- You will get 1% group effort mark based on a score (out of 2: 0, 1 or 2) that your other 2 teammates assign to you based on their opinion of what you did to help create your group video and mark the other group's videos. If both teammates give you 0 for this, then you will receive 0 for the entire group video mark. Otherwise you will get the average of their scores (thus if both teammates give you 2 out of 2, you will get the entire 1 mark).
- Your group's video MUST be uploaded by: **Friday, November 22nd at 11:59pm**
- The video cannot be handed in late (your group will get 0 out of 4 if it is late)
- Your group will get the average mark of the 10 groups that watched your video.
- Your group must mark the 10 other videos must be submitted by: **Tuesday, December 3rd at 11:59pm**
- The marking of the 10 group videos cannot be late. (your group will get 0 out of 2 if the videos are not marked)
- Your peer assessment of your 2 teammates must be done by: **Tuesday, December 3rd at 11:59pm**
- Your peer assessment cannot be late, if it is, you will get 0 out of 1 even if your group members gave you a good assessment.

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 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.
 - 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 (e.g if the assignment was worth 10% of your final overall grade, you will be given 0 for the assignment AND an additional -10% will be added to your overall grade) 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.
 - 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!

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.schulich.uwo.ca/dentistry/docs/future_students/Western%20ONECard.pdf

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>.

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.

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.

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.

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

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.

ACCOMMODATIONS AND ACCESSIBILITY

In this course, documentation is ALWAYS required if you require an extension for an assignment or if you miss a lab or need accommodations for the final exam. It can only be collected by the student's Dean's Office/Academic Counselling unit.

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a self-reporting of absence or via the Dean's Office/Academic Counselling unit of your Home Faculty. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in NCB 280, and can be contacted at scibmsac@uwo.ca.

For further information, please consult the university's policy on academic consideration for student absences: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf.

If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam).

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).

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.

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.

SUPPORT SERVICES

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 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:

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

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>.