Instructor

Prof. Samuel A. Ajila

Office Hours

Office: MC 7038, Office Hours: Thursday 10:00 am to 11:00 am

Course Objectives


Learning Outcomes

- Ability to develop a conceptual model for a real-life complex system requirement
- Be able to design and develop a relational and/or object oriented database model for a problem domain (engineering, business, etc.)
- Be able to apply optimization to a database model to improve its performance
- Ability to apply deductive approach to data integration and mining
- Be able to use simple machine learning models for data analysis and prediction
- An understanding of distributed database techniques

Course Web Site

Carleton Central - cuLearn

Textbook and References


Links to Software, libraries, additional resources

Students are free to use any software. Specific software for project and term paper will be announced in class.

Evaluation and Marking Scheme

Grading Scheme:

<table>
<thead>
<tr>
<th></th>
<th>Assignments and Readings</th>
<th>Term paper and project</th>
<th>Final Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>10%</td>
<td>35%</td>
<td>55%</td>
</tr>
<tr>
<td>Date(s)</td>
<td>TBA in class</td>
<td>TBA in class</td>
<td>To be scheduled by the University</td>
</tr>
</tbody>
</table>

To pass this course, a student must show an in-depth understanding of the subject matter through the technical reading and the final term exam. **A grade of 73% or higher in the final exam is required to pass the course.**

- Late assignments/readings and term paper (or project) will be graded according to the following policy: a 20% penalty per day with a maximum of two late days after which the grade of 0 is assigned.

Project

Project and term paper specification will be given in class at the appropriate time.

Exams

The final examination is for evaluation purposes only and will not be returned to students. You will be able to make arrangements with the instructor or with the department office to see your marked final examination after the final grades have been made available.

General Regulations

- **Deferred Term Work**: Students who claim illness, injury or other extraordinary circumstances beyond their control as a reason for missed term work are held responsible for immediately informing the instructor concerned and for making alternate arrangements with the instructor and in all cases this must occur no later than three (3.0) working days after the term work was due. Consult the section 9.3 of the Graduate Calendar for more information.
• **Academic Integrity**: Students should be aware of their obligations with regards to academic integrity. Please review the information about academic integrity at: https://carleton.ca/registrar/academic-integrity/ This site also contains a link to the complete Academic Integrity Policy that was approved by the University's Senate.

• **Academic Accommodations**: Requests for Academic Accommodation You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:
  - **Pregnancy obligation**
    Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf
  - **Religious obligation**
    Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf
  - **Academic Accommodations for Students with Disabilities**
    If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.ca/pmc
  - **Survivors of Sexual Violence**
    As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support
  - **Accommodation for Student Activities**
    Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. https://carleton.ca/senate/wp-content/uploads/ Accommodation-for-Student-Activities-1.pdf

• **Copyright on Course Materials**: The materials created for this course (including course outline, slides, posted notes, labs, project, assignments, quizzes, exams and solutions) are intended for personal use and may not be reproduced or redistributed or posted on any web site without prior written permission from the author(s).

**Additional Information**

**Attendance**: Students are expected to attend all classes. Requests to accommodate missed exam, assignment and project/reading due dates, etc. because of conflicts with jobs or personal plans will not
be considered.

**Health and safety:**


**Final Grading Scheme for the course based on each University regulations:**

1. **Carleton University** (12 points grading system)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90-100%</td>
<td>12</td>
</tr>
<tr>
<td>A</td>
<td>85-89%</td>
<td>11</td>
</tr>
<tr>
<td>A-</td>
<td>80-84%</td>
<td>10</td>
</tr>
<tr>
<td>B+</td>
<td>77-79%</td>
<td>9</td>
</tr>
<tr>
<td>B</td>
<td>73-76%</td>
<td>8</td>
</tr>
<tr>
<td>B-</td>
<td>70-72%</td>
<td>7</td>
</tr>
<tr>
<td>C+</td>
<td>67-69%</td>
<td>6</td>
</tr>
<tr>
<td>C</td>
<td>63-66%</td>
<td>5</td>
</tr>
<tr>
<td>C-</td>
<td>60-62%</td>
<td>4</td>
</tr>
<tr>
<td>D+</td>
<td>57-59%</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>53-56%</td>
<td>2</td>
</tr>
<tr>
<td>D-</td>
<td>50-52%</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 50%</td>
<td>0</td>
</tr>
</tbody>
</table>

“**A+**” down to “**B-**” are the useful grades for graduate studies.

1. **University of Ottawa** (10 points grading system)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90 - 100%</td>
<td>10</td>
</tr>
<tr>
<td>A</td>
<td>85 - 89%</td>
<td>9</td>
</tr>
<tr>
<td>A-</td>
<td>80 - 84%</td>
<td>8</td>
</tr>
<tr>
<td>B+</td>
<td>75 - 79%</td>
<td>7</td>
</tr>
<tr>
<td>B</td>
<td>70 - 74%</td>
<td>6</td>
</tr>
<tr>
<td>C+</td>
<td>65 - 69%</td>
<td>5</td>
</tr>
</tbody>
</table>

“**A+**” down to “**B**” are the useful grades for graduate studies.

**Some programs at Ottawa U**

(continued...)**
C          60 - 64%            4 grade points  may accept C+ as pass grade. Ottawa U
D+         55 - 59%            3 grade points  students should find out if their programs
D          50 - 54%            2 grade points  accept C+ as pass grade)
E          40 - 49%           1 grade point
F          0 - 39 %            0 grade point

Tentative Week-By-Week Schedule

The last three topics are subject to time availability

1. Introduction to Database - Self study (Part One of the recommended book)
2. The relational data model - Self study
3. Conceptual Modeling with Entity-Relationship model (Self study and Quick Review in class)
4. Relational Algebra, SQL, Triggers, and Active Databases (Self study and Quick Review class)
5. Database Design with Normalization Theory
6. Logic: A deductive approach to Database
7. SQL in the Real World - Static & Dynamic SQL, JDBC, SQLJ, & ODBC
8. Overview of Query Processing and Optimization
9. OLAP, Data Warehousing and Data Integration
10. Introduction to Data Mining
11. Data Mining – Association Rules
12. Object Oriented Databases - Object Model, ODMG, Object SQL (OQL), and CORBA (or JDO or other modern DB interface)
13. Distributed Databases
15. Web Services
16. Security and Electronic Commerce