Course Information

Instructor Information:

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Dongfang Zhao</th>
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<tr>
<td>Office</td>
<td>SEM 206</td>
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<tr>
<td>Phone</td>
<td>775-784-1410</td>
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<td>Email</td>
<td><a href="mailto:dzhao@unr.edu">dzhao@unr.edu</a></td>
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<tr>
<td>Lectures</td>
<td>Tuesday/Thursday, 4:30pm—5:45pm, AB 109</td>
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<tr>
<td>Office Hours</td>
<td>Tuesday/Thursday, 3:00pm—4:30pm</td>
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Course Description:

The purpose of this course is to provide a comprehensive introduction to the use and design of data management systems for applications. Some of the topics covered are the following: data models, query languages, transactions, parallel data processing, and database as a service. In addition, students will understand the principles behind building data management systems.

Course Pre/Co-requisites:

Prerequisite(s): CS 446 with a “C” or better.

Required texts, course materials:

- Recommended: *Database Management Systems (3rd edition)*, by Raghu Ramakrishnan and Johannes Gehrke

Unique class procedures /structures:

None

Student Learning Outcomes:

- Design, implement, and evaluate a computing or engineering solution to meet a given set of requirements, with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively in a variety of professional contexts, with a range of audiences.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Graduate students: An ability to apply engineering and computer science research and theory to advance the art, science, and practice of the discipline.

Course Requirements:

Programming assignment, quiz, final exam.
Grading Criteria, Scale, and Standards:

- A: 90% - 100%
- B: 80% - 89.9%
- C: 70% - 79.9%
- D: 60% - 69.9%
- F: < 60%

Late work or make-up exams will be granted by the instructor case-by-case.

Course Calendar or Topics Outline:

- Introduction, data models, SQL: Week 1-2
- Relational algebra, query evaluation, conceptual design: Week 3-4
- Architecture, storage, execution: Week 5-6
- Operator implementation, cost estimation, optimization: Week 7-8
- Transactions: Week 9-10
- Parallel databases, MapReduce, Spark: Week 11-12
- 2-phase locking, replication, NoSQL, NewSQL: Week 13-14

University Policies

Statement on Academic Dishonesty:

"Cheating, plagiarism or otherwise obtaining grades under false pretenses constitute academic dishonesty according to the code of this university. Academic dishonesty will not be tolerated and penalties can include filing a final grade of "F"; reducing the student's final course grade one or two full grade points; awarding a failing mark on the coursework in question; or requiring the student to retake or resubmit the coursework. For more details, see the [University of Nevada, Reno General Catalog](https://www.unr.edu)."

Statement of Disability Services:

“Any student with a disability needing academic adjustments or accommodations is requested to speak with me or the [Disability Resource Center](https://pennington.unr.edu) (Pennington Achievement Center Suite 230) as soon as possible to arrange for appropriate accommodations.”

Statement on Audio and Video Recording:

"Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded."

The University of Nevada, Reno is committed to providing a safe learning and work environment for all. If you believe you have experienced discrimination, sexual harassment, sexual assault, domestic/dating violence, or stalking, whether on or off campus, or need information related to immigration concerns, please contact the University's Equal Opportunity & Title IX office at 775-784-1547. Resources and interim measures are available to assist you. For more information, please visit the [Equal Opportunity and Title IX](https://www.unr.edu/EO) page.