School of Computer Science and Information Systems
44-560 - Advanced Topics in Database Systems (3hrs)
Spring 2024

Instructor: Prasad Chetti
Email: pchetti@nwmissouri.
Office: CH 2930
Phone: 660-562-1551
Office Hours: MWF: 3pm-4pm
TR: 9am-11am

Prerequisites: 44460 Database Systems with a grade of C or better (B or better for graduate students), or graduate standing with prior database experience and experience in Java programming.

Textbook and supplementary materials:
Title: Database Systems: Design, Implementation, and Management
Edition: 12e
Authors: Carlos Coronel and Steven Morris
Students must have frequent access to

Microsoft Office, including Word and PowerPoint
ERD Plus, LucidChart, Microsoft Visio or other ER diagramming tool Java
JDK 8, or later (free download)
NetBeans 8.2 or later (free download)
Oracle 12c and Oracle SQL Developer (free download)
A tool that will compress and decompress .zip files.
https://nwmissouri.instructure.com
Students using an Apple Mac computer will need to download VirtualBox and install Windows 10 in order to install Oracle.

Course description: Advanced topics in database systems, including database administration, distributed databases, and data warehousing. Hands-on experience using a Database Management System in a client/server environment. (3 credit hours)

Student learning outcomes:
• identify the basic concepts of data warehousing, including the architectures used and the characteristics of data warehouse data
• design both operational databases and data warehouses, including dimensional modeling and transformation of operational data into data suitable for storing in a data warehouse
• utilize client-side activities in a DBMS, including creating and modifying database objects; adding, deleting and modifying data; querying data; creating triggers and stored procedures; embedding SQL statements in a programming language; accessing and modifying data in a database programmatically
• identify the basic concepts of transaction management, including concurrency controls, locks,

transaction logs, and recovery
• analyze access plans using the basic concepts of query optimization 2
• describe the basic concepts of distributed databases, including the various options for distributing a database, the functions of a distributed DBMS, transparency requirements, and partitioning schemes

Assessment methods: Assignments, quizzes, exams, and projects
Instructional methods: Students should expect the following instructional methods; lectures, class discussions, small group work, individual and group work, learner presentations, and guest speakers.

Graded course requirements: (Points are estimates and may vary slightly)

Components	**Points**
Exam 1	50
Exam 2	50
Quizzes	20
Comprehensive final exam	100
Project	50
Assignments	100
in-class activities	60
Software installation discussion participation and certifications (these are extra credit points and not counted in the total)	30
Attendance	40
Total Points	**500**

Your score on each component will be posted in the online gradebook as soon as that component has been graded. You are responsible for checking the gradebook at least once a week to ensure that your grades are properly posted. ***If there is an error in grading, you must bring it to the attention of the class assistant or instructor within two weeks of the time the grade is posted.***
To satisfy the university policy that graduate students in 500-level courses must have requirements beyond those of the undergraduate students, a different grading scale is used for undergraduate and graduate students.

Grading scale:

Grading Scale – Undergraduates		**Grading Scale – Graduates**	
Percent Range	**Grade**	**Percent Range**	**Grade**
88-100%	A	90-100%	A
>= 78% and < 88%	B	>= 80% and < 90%	B
>= 70% and < 78%	C	>= 70% and < 80%	C
>= 60% and < 70%	D	>= 60% and < 70%	D

below 60%	F	below 60%	F

Course outline/major topics to be studied:

Topics
Review of ER Modeling
Review of SQL
Transaction Management and Concurrency Control
Performance Tuning and Query Optimization
Distributed Database Management Systems
Oracle and SQL Plus/Developer
Advanced SQL
PL/SQL & Stored Procedures
Triggers & Cursors
Data Warehousing
NoSQL Databases
JDBC
Presentations

Attendance: Attendance on this course is mandatory. Some in-class exercises may have points associated with them and may not be announced in advance. A student who misses such an exercise due to an unexcused absence will not be allowed to make it up and will receive a zero. Excused absences include attendance at a university sponsored event (documented with an excuse signed by the university sponsor prior to the event) or by circumstances considered adequately extenuating by the course instructor. It is the responsibility of the student to promptly notify his or her instructor when unable to attend class. Please refer to the university policy on attendance at https://www.nwmissouri.edu/policies/academics/Attendance.pdf

Quizzes: There may sometimes be short quizzes, usually worth five points or less. Quizzes will not always be announced in advance. They will usually be given at the beginning of the class. If you arrive late, after the quiz has started, you cannot take the quiz. If you miss a quiz due to an unexcused absence, you will receive a grade of zero on the quiz. If you have an excused absence, with the required written documentation, grades for missed quizzes will be replaced by the average of the grades of all the quizzes you take during the semester.

Exam Policies: The tentative weeks for exams are given in the course schedule. Exact dates and other details will appear on the course website. If you must miss an exam, it is your responsibility to notify the instructor prior to the exam. Make-ups for written exams will be given only for valid and verifiable reasons. Valid reasons include illness, family emergencies, and university-sponsored trips. Written documentation with suitable verification must be supplied before a make-up will be allowed. All exams are closed book, closed notes, unless explicitly noted in writing by the instructor. No calculators, cell phones, or other electronic devices can be used during exams unless explicitly allowed

by the instructor. **If exams are scheduled online with Respondus Monitor, you are responsible for the registration fee if any.**

Cell phone:
Students should keep their cell phones silent during class and should not be in sight. The prevention includes taking pictures of the whiteboard. It is proven that notes written down are more helpful to learn and remember.

Final exams:
If an emergency occurs that prevents the administration of a course scheduled final examination, the final course grades will be calculated based on the work in the course completed to that point in time and the faculty member's considered judgment. Final exams will not be rescheduled, and a grade of "I" will not be given as a result of an institutional cancellation of a final examination. This final exam policy does not apply to online courses.

Final Exam is cumulative.
Time: Thursday, April 25th 11:50 a.m-1:50 p.m.

Disclaimer: Course schedule is subject to change, and you will be responsible for abiding by any such changes. Your instructor will notify you of any changes.