School of Computer Science and Information Systems
44-560-02/03/04 - Advanced Topics in Database Systems (3hrs)
Fall 2022

Contact information:

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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 through the use of the basic concepts of query optimization
- 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

Student learning outcomes assessment methods: Assignments, quizzes, exams.

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	100
Exam 2	100
Exam 3	100
1 project/paper presentation	50
1 comprehensive final exam	150
Assignments; in-class exercises; quizzes	150 - 165
Software installation discussion participation (these are extra credit points and not counted in the total)	20
Attendance	0 - 20
Total Points	**670 - 705**

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 studied:

Topics
Review of ER Modeling
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

Note: The course schedule is subject to change with instructor notification and students will be responsible for abiding by these changes.

Attendance: Students are expected to attend all classes as specified in the course syllabi for each course. 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.**

Due Dates: Each assigned, graded activity will have a due date posted. Late assignments will not be accepted except in cases of *documented* illness or family emergencies.

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.

Administrative drop: An instructor may request the Office of the Registrar delete a student from a course roster if the student has not met the prerequisite for the course as stated in the catalog, or as a result of non-attendance in the course.

Academic Administrative withdrawal: When it is in the best interest of Northwest Missouri State University for a student to withdraw, a student will be given a W, put on administrative hold, and given notice that they are about to be withdrawn. This action will result in removal of all credits associated with courses that have yet to be completed in the semester in question and the student will be administratively withdrawn from the University. An Administrative Withdrawal does not affect the student's grade point average. Please refer to Northwest Missouri State University's Academic Administrative Withdrawal Policy at: https://www.nwmissouri.edu/policies/academics/Adding-Dropping-Withdrawals.pdf

University communications: Students are expected to use their Northwest student email account for any electronic correspondence within the university. Students are also strongly advised to check their email and CatPAWS accounts on a regular basis.

Academic integrity policy: The students, faculty, and staff at Northwest endeavor to sustain an environment that values honesty in academic work, that acknowledges the authorized aid provided by and intellectual contributions of others, and that enables equitable student evaluation. Please refer to Northwest Missouri State University's Academic Integrity Policy at http://www.nwmissouri.edu/policies/academics/Academic-Integrity.pdf. In addition, the document entitled Academic Integrity in CSIS Classes, posted on the course website, clearly explains those types of behavior that would be considered academic dishonesty. You are responsible for reading both documents, and abiding by the guidelines described therein.

Note that plagiarism includes, but is not limited to, failure to give credit for help received on a homework assignment. Also note that all assignments are to be done individually, unless specified otherwise. You may talk to classmates and other students about an assignment, but you must do all the work yourself from beginning to end. Two or more students may sit down together and discuss an assignment as they are working on it, but each student must do his/her own work in completing the assignment. You cannot copy another person's code or written work. You cannot copy database objects or any portion of a database from another student's files.

Failure to follow these guidelines and the remaining guidelines described in the *CSIS Academic Integrity Policy* will be subject to the penalties described in the catalog.

Professionalism: Students are expected to behave in a professional manner in their dealings with each other, the class assistant, and the instructor. E-mails and other electronic communications should be politely written, use proper grammar, and follow the rules of capitalization. Emails *must* include the course number (44-560) in the subject line. For security reasons, I never open emails that do not include an appropriate entry for the subject.

Learning or Living Accommodations Request Process: Northwest Missouri State University complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 [ADA] and the ADA Amendments Act of 2008 [ADAAA].   If a student has a documented disability that qualifies under the ADA/ADAAA and requests accommodations, they should review the Accessibility and Accommodations webpage at   https://www.nwmissouri.edu/titleixequity/accessibility/index.htm   for   guidance,   including   the accommodations application and supporting documentation requirements. Contact ada@nwmissouri.edu or 660.562.1873 for further assistance.   For the university policy on disability accommodation refer to http://www.nwmissouri.edu/policies/student/Disability-Accommodation.pdf

Non-discrimination and anti-harassment policy: Northwest Missouri State University is committed to maintaining an environment for all faculty, staff, students, and third parties that is free of illegal discrimination and harassment. Please refer to the Non-Discrimination and Anti-Harassment Policy at http://www.nwmissouri.edu/diversity/titlevi.htm

Family Education Rights and Privacy Act (FERPA) policy: Family Educational Rights and Privacy Act of 1974, as amended (commonly known as the Buckley Amendment), is a federal law which provides that colleges and universities will maintain the confidentiality of student education records. Please refer to the Family Educational Rights and Privacy Act (FERPA) Policy at http://www.nwmissouri.edu/policies/academics/Family-Educational-Rights-and-Privacy-Act.pdf

Behavior and Wellness: Northwest focuses on student success—every student, every day.
The Wellness Center, 660.562.1348, offers free counseling for students coping with depression, anxiety, alcohol or drug misuse, relationships, and other emotional, social, and academic stressors. In addition, faculty, staff, and students who are concerned with student wellbeing can report their concerns, including anonymously, to the Behavioral Intervention Team, so that the student can be offered relevant support, at this link: Concerning Behavior Reporting Form. If you are concerned about the immediate safety of a student, please call the University Police, who have specialized training in intervention, at 660.562.1254.

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.