



**School of Computer Science and Information Systems
44-660 Database Design and Implement (3 hours)**

Spring 2026

Instructor: Dr. Keli Cheng
Office: CH 2305
Email: kcheng@nwmissouri.edu
Phone: 660.562.0822 (office)

Office Hours:
 Mon/Wed: 3:00 p.m. – 5:30 p.m.
 Friday: 1:00 p.m. – 2:00 p.m.
 3:00 p.m. – 4:00 p.m.
 Others by appointment

Textbook and Supplementary Materials:

Textbook: Modern Database Management (14th Edition) by Jeffrey A. Hoffer, Ramesh Venkataraman, Heikki Topi. Published by Pearson Education, Inc. ISBN: 9780135346853.
 Graduate students enrolled in 44-660 will need to purchase this textbook.

Software: Students must have access to

- WinZip or some other software to unzip files downloaded from the course site and to zip files you are uploading.
- Apache, PHP, MySQL, and MongoDB -- these are free downloads (instructions for installing will be provided)

Course Description: An introduction to database systems, including design, organization, and implementation.

Student Learning Outcomes:

Assessment Methods:

1. Define basic terms used in database management systems	Quizzes and exams.
2. Describe the advantages and disadvantages of using database management systems	Quizzes and exams.
3. Describe the database development process	Quizzes and exams.
4. Understand the basic concepts of logical database design	ER diagram assignments, quizzes, exams.
5. Describe the physical database design process	Quizzes and exams.
6. Incorporate business rules into a conceptual data model	ER diagram assignments, quizzes, exams.
7. Model sophisticated relationships among data, including strong and weak entity types, composite attributes, multivalued attributes, derived attributes, cardinality constraints, unary relationships, binary relationships, ternary relationships, supertypes, subtypes	ER diagram assignments, quizzes, exams.
8. Normalize a set of database tables to third normal form	Normalization problems/assignments, quizzes, exams.

9. Understand the basic concepts of physical database design, including volume estimates, designing fields, denormalization, indexing, and query optimization	Quizzes and exams.
10. Retrieve information from database files using SQL	SQL assignments, SQL exam.
11. Use a DBMS to implement database applications	PHP assignment/project.
12. Design a database to meet the requirements specified by a client	ER diagram assignments.
13. Get exposure/introduction to NoSQL databases using MongoDB	MongoDB assignment.

Instructional Methods: Instructional methods include lectures, class discussions, individual work, individual/group study, learner participation, assigned reading/exercises, and help sessions.

Graded Course Requirements: (Points are estimates and may vary slightly)

Grading Components	Points
Exam 1	60
Exam 2	60
Final Exam (comprehensive)	120
Quiz 1 and 2 @ 30 points each	60
Chapter Assignments (3 @ 30 pts each)	90
SQL Assignments (3 @ 30 pts each)	90
PHP Assignment	65
Research Paper (44660 only)	50
MongoDB Assignment	20
PHP/MongoDB Quiz	20
Participation	20
Total Points	655
Miscellaneous	0-20 (bonus)

Attendance: Attendance in 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>

Participation: To earn participation points, students must demonstrate appropriate behavior in class, actively work on in-class exercises, and submit the completed exercises by the deadline. Failure to meet any of these requirements will result in the loss of participation points for that day. Each student is allowed to miss in-class exercises worth up to 3 points without providing an excuse.

Exams and Quizzes: Exams and quizzes must be taken at the scheduled time, as outlined on the course website. The tentative weeks for exams are listed in the course schedule, with exact dates and additional details provided online. All exams are closed book and closed notes unless explicitly stated otherwise by the instructor. Exams and quizzes will be conducted using LockDown Browser. The use of any electronic devices other than your laptop is strictly prohibited.

If you must miss an exam or quiz, it is your responsibility to **notify the instructor in advance and provide written documentation** of a valid and verifiable reason (such as illness, family emergencies, or university-sponsored events). Failure to do so may result in point deductions or a grade of zero. Make-up exams will only be granted with appropriate verification and prior approval.

Assignments: Assignments are individual projects. They must be submitted in the appropriate drop box by the due date. Submitting incorrect file results in getting a 0 for that assignment. You may talk freely with your classmates, instructor, and class/lab assistants regarding the assignments, but any help received must be fully credited. Failure to credit a source constitutes plagiarism and is subject to the university rules regarding cheating. It is never permissible to copy another person's work. Read the section in this syllabus on academic honesty for details.

Late Submission Policy: Assignments submitted after the due date will incur a **20% deduction** for each 24-hour period. If any issue, such as a technical problem or health concern, prevents you from submitting the assignment on time, you must notify the instructor **BEFORE** the due date.

Worksheets: All worksheets, including solutions, will be available on the course website. After-class worksheets are not turned in or graded. However, doing the worksheets will help you perform well on the exams. Use the keys to the worksheets wisely. By the time you take an exam, you should be able to complete all the worksheets without referring to the keys.

Miscellaneous Points: Miscellaneous points consist of any extra points that may be awarded for activities.

Grading scale:

Percentage Letter Grade	
90-100%	A
$\geq 80\%$ and $< 90\%$	B
$\geq 70\%$ and $< 80\%$	C
$\geq 60\%$ and $< 70\%$	D
Below 60%	F

Grading Policy: Grades are posted in the online gradebook. 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 that to the attention of the class assistant or instructor within two weeks of the time the grade is posted.

Course Outline/Major Topics Studied:

The following is a tentative schedule and is subject to change. For exact information, including important dates, check the course website.

Week #	Lectures	Notes
Week 1	Chapter 1 – The Database Environment and Development Process	Student Agreement Quiz
Week 2	Chapter 2 – Modeling Data in the Organization	No class Monday (MLK Day)
Week 3	Chapter 2 – Modeling Data in the Organization	Chapter 2 assignment
Week 4	Chapter 3 – The Enhanced ER Model	Chapter 3 assignment
Week 5	Chapter 4 – Logical Database Design and the Relational Model	MySQL Installation Quiz #1
Week 6	--- Spring Break (no class) ---	--- Spring Break (no class) ---
Week 7	Chapter 4 – Logical Database Design and the Relational Model	Exam 1 (covers chapters 1, 2, and 3)
Week 8	Chapter 8 – Physical Database Design and Performance	Chapter 4 assignment
Week 9	Chapter 5 – Introduction to SQL	Quiz #2
Week 10	Chapter 5 – Introduction to SQL	Exam 2 (covers chapters 4 and 8) SQL Assignment #1
Week 11	Chapter 6 - Advanced SQL	SQL Assignment #2
Week 12	Chapter 6 - Advanced SQL	SQL Assignment #3
Week 13	Chapter 7 - Database Application Development, HTML, PHP	
Week 14	PHP, NoSQL using MongoDB	PHP Assignment, MongoDB Assignment
Week 15	PHP Quiz Final Exam Review	PHP Assignment (cont.), MongoDB Assignment (cont.)
Final's Week	FINAL EXAM https://www.nwmissouri.edu/registrar/finals.htm	Final Exam is cumulative

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

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.

Cellphone: 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.

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.

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.