

ISYE 482/582 Engineering Information Systems (Spring 2026)

Instructor:	Dr. Niechen Chen	E-mail: nchen@niu.edu
Meeting Times:	T&TH 14:00-15:15, @ EB311	
Office Hours:	T&TH 1-2pm Or by appointment. @ EB250 or Microsoft Teams	
Course Description:	Basic concepts, design, development, and the use of engineering information systems. Topics include architecture and components of engineering information systems, problem analysis, modeling, design, development, and validation of application systems. Theoretical and practical issues related to manipulation of engineering information and design of queries. Examples of engineering information systems. Credits: 3.	
Course Requirement:	CSCI240 or OMIS351, and experience using MS-Word and web browsers.	
Course Resources:	There is no textbook for this course and all course materials will be posted on the course website on Blackboard. You may need a good resource on MS-Access 2016 or higher	
Additional Material:	Additional material will be provided on Blackboard.	
Learning Objectives:	After successfully completing this course, students will be able to: <ol style="list-style-type: none">1. explain basic file structures and indexing mechanisms related to database systems,2. analyze situations that deal with information and identify their information needs and define their requirements,3. model and design information systems for simple problem situations,4. analyze anomalies in information system designs, and develop queries to extract information,5. use MS-Access to design simple database applications and present them orally and in writing, and6. participate in team projects, and7. analyze ethical issues in information systems.	
Course topics	<ol style="list-style-type: none">1. Introduction Need for Engineering Information Systems (EIS) Types of Engineering Data Components and Functions of EIS2. Review of Data Structures Files and File Structures Indexes B+ Trees and B Trees3. Modeling Engineering Information	

Needs Analysis
 Process Modeling and Data Flow Diagrams
 Data Modeling and the Entity-Relationship Model
 Obligatory and Non-Obligatory Relationships
 Design of Engineering Information Systems

4. Validating Engineering Information Systems
 Types of Anomalies in Engineering Data
 Eliminating Anomalies in Engineering Data
 First, Second, Third, Fourth, and Fifth Normal Forms
5. Information Manipulation
 Relational Algebra
 Structured Query Language (SQL)
6. Engineering Information Application Systems
 Designing Engineering Information Applications
 Developing Engineering Information Applications

*These topics are tentative and may be subject to changes.

Grading:

- **ISYE 482:**
 Homework Assignments: 10%
 In-Class Exercises: 10%
 Computer Assignments: 10%
 Midterm Exam: 25%
 Final Exam: 25%
 Course Team Project: 15%
 Class Participation: 5%
- **ISYE 582:**
 Homework Assignments: 10%
 In-Class Exercises: 10%
 Computer Assignments: 10%
 Midterm Exam: 25%
 Final Exam: 25%
 Course Team Project: 15%
 Advanced Topics Exploration and Presentation: 5%
- Each student will receive a letter grade based on his/her cumulative percentage score according to these scales:

A 100 – 93	C+ 79.9 – 77
A- 92.9 – 90	C 76.9 – 70
B+ 89.9 – 87	D 69.9 – 60
B 86.9 – 83	F Below 60
B- 82.9 – 80	

Graduate Student Learning Outcomes (ISYE 553 Only)

This course is designed to contribute the following 5 Graduate Program Outcomes:

1. An ability to define and formulate industrial and systems engineering problems.
2. An ability to apply math and scientific tools to design, describe, predict, improve, and optimize system performance.
3. An ability to independently learn advanced topics in industrial and systems engineering.

4. An ability to conduct research or project professionally and ethically.
5. An ability to effectively communicate ideas/concepts and research findings through technical reports and professional presentations.

Work Submission: All in-class exercises are to be submitted before the end of class time when they are due.

Collaboration: Quizzes and exams must be completed individually.

Academic Honesty: Good academic work must be based on honesty. The attempt of any student to present as his or her own work that which he or she has not produced is regarded by the faculty and administration as a serious offense. Students are considered to have cheated if they copy the work of another during an examination or turn in a paper or an assignment written, in whole or in part, by someone else or **AI tools**. Students are guilty of plagiarism, intentional or not, if they copy material from books, magazines, **AI tools**, or other sources without identifying and acknowledging those sources or if they paraphrase ideas from such sources without acknowledging them. Students guilty of, or assisting others in, either cheating or plagiarism on an assignment, quiz, or examination may receive a grade of F for the course involved and may be suspended or dismissed from the university.

Attendance & Participation: Participation in class exercises, discussion, and activities is strongly encouraged for this course. Regular attendance is expected. Please let the instructor know if you will be unable to attend a class. You have to participate in all class activities during the semester to get the full credit of this part of your assessment in this course. **No make-up** will be done for any missing class activity or exercise (except when a prior approval is obtained from the instructor or under extenuating conditions per university guidelines). As in a classroom situation, points for class participation are based not only on how much a student participates but also on the quality and helpfulness of the participation.

Late work: No late in-class exercises will be accepted.

Test make-ups: **No make-up tests.** Makeup exams will be given ONLY if you have to participate in NIU athletics for which you have an official approval or a medical emergency for which you can submit proof.

Accommodations: If you need any special accommodation in this course for any reason (e.g., scheduling, athletics, disability, and interviews), please inform the instructor as soon as possible, and a plan will be worked out.

Americans with Disabilities and Non-Discrimination Statement If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible. The DRC coordinates accommodations for students with disabilities. It is located in the Campus Life Building, Suite 180, and can be reached at 815-753-1303 or drc@niu.edu.

Also, please contact me privately as soon as possible so we can discuss your accommodation. Please note that you will not be required to disclose your disability, only your accommodation. The sooner you let me know your needs, the sooner I can assist you in achieving your learning goals in this course.

**Mental Health and
Well-being
Statement**

I understand that college students may experience a range of academic, social, and personal stressors, which can be overwhelming. You are not alone. Well-being at NIU offers resources, programs, and services. If you need assistance with comprehensive or crisis mental health support, Counseling and Consultation Services (CCS) at 815-753-1206 is ready to help.