
IE 6700: Data Management for Analytics

INSTRUCTOR	Prof. Xuemin Jin
COURSE	Data Management for Analytics, IE 6700, Credits 4
CLASS ROOM	Robinson 411
CLASS HOURS	MW 2:50PM-4:30PM
INSTRUCTOR CONTACT	<ul style="list-style-type: none">• Instructor Office: TBA• Instructor Phone 617-373-6769• Instructor Email x.jin@northeastern.edu
TA CONTACT	<ul style="list-style-type: none">• TBA• TA Office: TBA• TBA• TA Phone: TBA
OFFICE HOURS	<ul style="list-style-type: none">• Instructor: Tuesday 3:00PM-4:30PM (remote live via Zoom or Teams)• TA: TBA
COURSE DESCRIPTION	Covers the theory and applications of database management to support data analytics, data mining, machine learning, and artificial intelligence. Discusses the fundamental concepts and emerging technologies in database design and modeling, database systems, data storage and the evolving world of data warehousing and data governance. Presents a balanced theory-practice focus and covers relational databases, NoSQL databases, data integration, data quality, data governance, big data, and data processing for analytics.
PREREQUISITES	Basic knowledge of object oriented design and an object-oriented computer language such as C++, Java for graduate students; instructor permission for other students.
TEXT BOOK	Wilfried Lemahieu, Seppe vanden Broucke, and Bart Baesens, <i>Principle of Database Management: The Practical Guide to Storing, Managing and Analyzing Big and Small Data</i> , Cambridge University Press (August 30, 2018), ISBN: 978-1-107-18612-5.
REFERENCE	Richard T. Waston, <i>Data Management: Foundations of Data Analytics</i> , 6 th Edition, eGreen Press, ASIN: B00E8HS8N2.
COURSE OBJECTIVES	<p>In this course students are expected to accomplish following objectives:</p> <ul style="list-style-type: none">• To learn the fundamental concepts of database design and modeling• To understand database systems, data storage, data warehousing, and governance

	<ul style="list-style-type: none">• To apply various database systems and management technologies to practical problems• To do hands-on work to design, implement, and test relational and NoSQL database systems										
COURSE SYLLABUS	<ul style="list-style-type: none">• Fundamental Concept of Database Management• Emerging Technologies in Database Management• Conceptual Data Modeling• Relational Databases: The Relational Model• Relational Databases: Structured Query Language (SQL)• NoSQL Databases• Physical File Organization and Indexing• Big Data• Data Processing for Analytics										
PROGRAMMING LANGUAGES	<ul style="list-style-type: none">• SQL										
COURSE EVALUATION	<table><tr><td>• Quizzes</td><td>20%</td></tr><tr><td>• Homework</td><td>20%</td></tr><tr><td>• Use Case Project</td><td>30%</td></tr><tr><td>• Final Exam</td><td>20%</td></tr><tr><td>• Class Participation</td><td>10%</td></tr></table>	• Quizzes	20%	• Homework	20%	• Use Case Project	30%	• Final Exam	20%	• Class Participation	10%
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• Use Case Project	30%										
• Final Exam	20%										
• Class Participation	10%										
GROUP HOMEWORK	Students are required to form groups of 2 students using the self-enrollment list on the blackboard. All homework assignments and case study project are submitted in groups of 2 students.										
EXAMS	All exams are closed book and closed notes. Students are allowed to bring with them the 2-page formula cheat sheet.										
ASSIGNMENT SUBMISSION POLICY	Unless otherwise specified, all homework and assignments are due for submission at 11:59pm on the day they are due. Late submission of homework will receive penalty. For one-day delay, its grade will be cut by 10%. For two-day delay, its grade will be cut by 20%. Beyond two days past the deadline, the submission will not be accepted.										
MAKEUP POLICY	No makeup opportunity will be given for any missing quiz or missing exam except for <i>documented medical reasons</i> . Students unable to attend classes are responsible for obtaining information regarding announcements and lecture content.										

ATTENDANCE

Attendance is an important element for success in class. It is required, unless you are unable to make it due to illness or other urgent or emergent reasons. Contact me via email before the class time for allowed absence, unless you are unable to. Here is the section from the student handbook: Students will not be penalized for excused absences, with the understanding that students may need to make up for the academic commitment from which they were excused. Reasons for an excused absence include religious, medical issues, jury duty, bereavement, and military service. See the course catalog and other applicable policies for the full attendance and excusal policy.

HEALTH AND SAFETY – NORTHEASTERN COMMUNITY

The university has put into place a robust plan to make the campus healthy and safe for all.

- Wear a face mask or face covering indoors, regardless of vaccination status
- Get vaccinated and upload proof of immunization if you are located on a U.S. or Canadian campus.
- Complete the Daily Wellness Check any day you are on campus.
- Get tested weekly if you are located on a U.S. campus, regardless of vaccination status.
- Continue to practice good hygiene, wash your hands frequently, and stay home if you feel sick.

ACADEMIC INTEGRITY

A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

Go to <http://www.northeastern.edu/osccr/academic-integrity-policy/> to access the full academic integrity policy.

**STUDENT
ACCOMODATIONS**

Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability.

For more information, visit <http://www.northeastern.edu/drc/getting-started-with-the-drc/>.

**DIVERSITY AND
INCLUSION**

Northeastern University is committed to equal opportunity, affirmative action, diversity and social justice while building a climate of inclusion on and beyond campus. In the classroom, members of the University community work to cultivate an inclusive environment that denounces discrimination through innovation, collaboration and an awareness of global perspectives on social justice. It is my intention that students from all backgrounds and perspectives will be well served by this course, and that the diversity that students bring to this class will be viewed as an asset. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, socioeconomic background, family education level, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. Your suggestions are encouraged and appreciated.

Please visit <http://www.northeastern.edu/oidi/> for complete information on Diversity and Inclusion.

TITLE IX

Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance.

Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire

community, including male, female, transgender students, faculty and staff.

In case of an emergency, please call 911.

Please visit www.northeastern.edu/titleix for a complete list of reporting options and resources both on- and off-campus.

LIBRARY RESOURCES

Northeastern University Library offers a number of services to support you, including:

- A curated list of commonly used resources for mechanical engineers, including article databases
- Short tutorials on search tips and strategies
- Free interlibrary loan service for books or articles not available via library subscriptions
- Recorded short webinars on topics like designing posters and presentations, building context around a research article
- Research Data Services including data visualization and data management planning support
- Literature search consultations with a subject librarian who can assist with search tools and strategies
- Information and tools to help manage and cite your sources
- Study space including quiet zones, reservable study rooms, scanners and printers
- Access to course materials that professors request we keep on reserve for students in their courses
- 3D printing studio with a full suite of 3D fabrication resources you can use for personal or class projects
- 24/7 online chat to help with any questions you have