



Northeastern University

College of Engineering

INFO 5001 Application Modeling and Design

Course Information

Course Title: Application Modeling and Design
Course Number: INFO 5001
Term and Year : Spring 2024
Credit Hour: 4
Course Format:

Instructor Information

Name: Khaled Bugarra
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Course Prerequisites

N/A

Course Description

Practices social-technical software engineering methods and tools to solve real-world problems. Explores innovative design and programming techniques to build significant business applications quickly. Studies the process of systematically combining UX techniques, business processes, and complex data models to assemble applications that are user-friendly and meet business requirements. Employs the object-oriented paradigm, visual user interface design principles, and programming languages such as Java, as well as productivity tools, to put together complicated, powerful business applications with ease. Explores the art of how to systematically write software programs to solve any business problem, through practicing simple and smart ways of making software programming enjoyable.

Standard Learning Outcomes

Learning outcomes common to all College of Engineering Graduate programs:

- 1. An ability to identify, formulate, and solve complex engineering problems.*
- 2. An ability to explain and apply engineering design principles, as appropriate to the program's educational objectives.*
- 3. An ability to produce solutions that meet specified end-user needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.*

The Information Systems Program accepts students of different engineering backgrounds with minimum programming skills and produces first class Information Systems engineers that operate at the intersection of real-world complexity, software development, and IT management. Graduating students will be able to construct end-to-end advanced software applications that meet business needs.

Specific Learning Outcomes for the Information Systems program:

1. *Create a strong technical foundation through diverse, high-level courses*
2. *Built crucial interpersonal skills needed to succeed in any industry*
3. *Foster a deep level of applied learning through project based case studies*

Course Outcomes and Assessment Standards

The primary objective of this course is to practice social-technical software engineering methods and tools to solve real-world problems. Students will learn innovative modeling and design techniques to build significant business applications quickly. In a step-by-step manner, the instructor will take students through the process of systematically combining UX techniques, business processes, and complex data models to assemble applications that are user friendly and meet business requirements. Students will learn how to employ the object-oriented paradigm, visual user interface design principles, as well as productivity tools to put together complicated, powerful business applications with ease. Through practicing simple and smart ways of making software design enjoyable, students will master the art of how to systematically architect software systems to solve business problems.

Besides the lectures, the class will have lab sessions, which will permit continuous interaction. The time will be divided into lecture, lab, help sessions; students will engage in hands-on analysis and design instructor supervision. For the duration of the semester, we will focus on a single business problem – you will focus on one problem for the entire semester and that you will start small and gradually expand the scope. Students will practice the art of how to break down business requirements into small manageable components, specify the components, and assemble those components into useful systems.

Our Approach

Students will select a practical business problem and articulate its underlying user requirements. They will engineer an information model capturing the important aspects of the business problem and define the business processes necessary to deliver the solution that will satisfy the stated business requirements as well as define the user tasks as screen designs. We will work on identifying and incorporating the information needed for the task (screen) at hand. The information model will be linked to user screens through input and output flows and data transformation.

Students will build an inventory system for warehouse operations: the warehouse serves multiple retailers in different geographical areas. Warehouse operations employ a multitude of suppliers, offering wholesale products and services for the benefits of the retailers. What if a user of the new software wants to scale your implementation to support multiple warehouses in different localities? You will learn how Java and other object-oriented techniques can help you to do just that, in a fast and fun way.

Tentative Schedule of the Course

Week	Date	Topic/Activity	Type
Week1		Introduction to the course	Lecture
Week2		Creating and displaying multiple objects	Lecture
Week3		Define user processes	Lecture
Week4		Modeling the supply-side	Lecture

Week5		Designing the user into the application	Lecture
Week6		Order processing	Lecture
Week7		Digital Marketing	Lecture
Week8		Business cases	Lecture
		Final Project Announcement	Final Project
		Mid-term exam	Exam
Week9		Eco-System Design Techniques part I	Lecture
Week10		Eco-system Design part II	Final Project
Week11		Final Project Status Check	Lecture
Week12		Case Studies	Lecture
Week12		Final Project Status Check	Final Project
Week13		Design Patterns 1	Lecture
Week14		Design Patterns 2	Lecture
Week14		Final exam	Exam
Week15		Final Project Submission	Final Project
Week15		Final Project Presentation	Final Project

Grading

Coursework will be weighted as follows:

<i>Name</i>	<i>Percentage</i>
<i>Assignment and Lab</i>	20%
<i>Weekly quizzes</i>	20%
<i>Spot Attendance</i>	10%
<i>Final Project</i>	50%

End-of-Course Evaluation Surveys

Your feedback regarding your educational experience in this class is very important to the College of Professional Studies. Your comments will make a difference in the future planning and presentation of our curriculum.

At the end of this course, please take the time to complete the evaluation survey at <https://neu.evaluationkit.com>. Your survey responses are **completely anonymous and confidential**. For courses 6 weeks in length or shorter, surveys will be open one week prior to the end of the courses; for courses greater than 6 weeks in length, surveys will be open for two weeks. An email will be sent to your HuskyMail account notifying you when surveys are available.

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 Accommodations

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/>.

Library Services

The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information and for Education specific resources, visit <http://subjectguides.lib.neu.edu/edresearch>.

24/7 Blackboard Technical Help

For immediate technical support for Blackboard, call 617-373-4357 or email help@northeastern.edu

Within Blackboard, open a support case via the red support button on the right side of the screen, click Create Case

myNortheastern, e-mail, and basic technical support

Visit the [Information Technology Services \(ITS\) Support Portal](#)

Email: help@northeastern.edu

ITS Customer Service Desk: 617-373-4357

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, member 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.

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.