



# Northeastern University

## College of Engineering

### INFO 5100 Application Engineering And Development

#### Course Information

Course Title: Application Engineering and Development

Course Number: INFO 5100

Term and Year: Spring 2024

Credit Hour: 4

Course Format: On-Ground

#### Instructor Information

Full Name: Taral Oza

Email Address: t.oza@northeastern.edu

#### Course Prerequisites

N/A

#### Course Description

Takes students in a step-by-step manner 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. Employs the object-oriented paradigm, visual user experience, and system design principles to put together complicated, powerful, real-world applications. The primary objective of this course is to practice social-technical software engineering methods and tools to solve real-world problems. Offers students an opportunity to learn innovative design and programming techniques to build significant business applications quickly; to practice simple and smart ways of making software construction enjoyable; and to master the art of how to systematically write software programs to solve any business problem.

#### 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*

## **TENTATIVE TOPICS:**

- Introduction
- Installation and IDE
- Programming Basics
- Object-Oriented Programming
- Java Data Structures
- Advanced Java
  - Multi-threading
  - File I/O
  - Serialization
  - Regular Expressions
  - Lambda
  - Generics
  - NIO
  - HTTP Client
  - Concurrency
- JavaFX
- Design Patterns
- Java Cryptography
- XML and JSON processing

## **GRADING**

- Research Report: 70%
- Class Participation: 10%
- Quizzes: 20%

## **CLASS POLICIES:**

- Punctuality, attendance and class participation are essential for success. If a student must miss a class for a valid reason, he/she should make arrangements ahead of time to complete the assignment and turn it in on time.
- All quizzes are open notes, open computer. Quizzes include questions requiring the student to have a good understanding of the software and concepts taught in class.
- Make-ups will only be given under extenuating and unavoidable circumstances. The student is responsible for informing the instructor prior to missing a class or an exam.
- Students should feel free to exchange ideas with each other. However, some effort through internet research is expected to solve various technical issues during class exercises.

## TEXT BOOKS:

None

### 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](mailto: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](mailto: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](http://www.northeastern.edu/titleix) for a complete list of reporting options and resources both on- and off-campus.***