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 2022
Credit Hour: 4
Course Format: On-Ground

Instructor Information
Full Name: Siva Dosapati
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Course Prerequisites
N/A

Course Description
This course provides an introduction to the Java Programming language with Object Oriented concepts, and an emphasis on design, engineering and unit testing. The curriculum covers core Java features through introductory graphical interfaces. Hands-on development exercises will explore the production of real world business problems and culminate with individual competition in a software simulation challenge. Upon completion of this course, the student will possess a solid foundation to core Java functionality, and make informed decisions regarding Java's suitability to address workplace challenges.

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*

Textbook:

- Head First Java :

    a. https://www.amazon.com/Head-First-Java-Kathy-Sierra/dp/0596009208
    b. http://dslab.us/wp-content/uploads/book/pdf/java/HeadFisrt_JAVA.pdf

Course Objectives:

- Demonstrate fluency in the Java programming language

- Understand and leverage procedural and object-oriented paradigms

- Understand standard data types, primitive classes, wrapper classes and String classes

- Understand OO concepts: encapsulation, inheritance, polymorphism, and abstraction

- Understand the usage of Abstract classes, interfaces and inner classes

- Understand handling of exceptions and multi-threaded programming

- Understand Arrays and Collection framework, Collections, Lists, Sets Maps

- Use file IO, and handling of exceptions

- Understand building user interfaces using Java Swing

- Sample project to develop a swing application for searching cars

Grades

Attendance and Participation	**5%**
Individual Assignments	**40%**
Midterm Exams	**15%**
Final Project Assignment	**40%**

Attendance policy

The Information Systems Department has a strict class attendance policy. Students who miss two or more classes will automatically receive one letter grade lower in their final grade. Students who miss three classes will receive an automatic F for the class. No exceptions are allowed for this rule.

Individual Assignments

There will be four individual assignments. These assignments are to be done individually and submitted in class. Submittals consist of deliverable software with accompanying documentation. Assignment details will be provided during the second week of the course.

Final Project Assignment

Each student will have an opportunity to work in a team on the final project. Project details will be provided during the last 4 classes of the course.

Week 1	Welcome, Overview of OOP, Thinking in Objects
Week 2	Java, Helloworld example, Variables, values and types, Classes and objects, Program flow control, Boolean expressions, Arrays, Loops
Week 3	Unit Testing, Debugging, String class and manipulation, StringBuilder, Wrapper classes
Week 4	Object Oriented Programming – Constructors/Destructors, Encapsulation, Abstraction, Polymorphism
Week 5	Object Oriented Programming cont'd– Encapsulation, Abstraction, Polymorphism
Week 6	Abstract classes, Interfaces, final, static keywords
Week 7	Exception handling Advanced Debugging and Logging
Week 8	Midterm Exam Java arrays, ArrayList, Collections framework Generics - Hashmap, Iterators
Week 9	Java Threads Synchronization Parallel processing File Processing (Input/Output)
Week 10	Java 8 Features
Week 11	Developing User interfaces using Java swing
Week 12	Sample project – Build a portal for Searching Cars
Week 13	Sample project cont'd
Week 14	Sample project cont'd
Week 15	Demo of the Final project

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 emailhelp@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.