



INFO 5100: Application Engineering and Development

Course Information

Course Title: Application Engineering and Development

Course Number: INFO 5100

Term and Year: Fall 2025

Credit Hour: 4

CRN: 17623

Course Format: Lecture - In-Person

Instructor Information

Full Name: Tessema Mengistu

Email Address: t.mengistu-at-northeastern-dot-edu

Office Hours: TBA

Instructor Biography

<https://coe.northeastern.edu/people/mengistu-tessema/>

Teaching Assistant Information

Full Name: TBA

Email Address: TBA

Office Hours: TBA

Course Prerequisites

None

Course Description

This course is an introduction to the Java Programming language with Object Oriented concepts, and an emphasis on design, engineering, and unit testing. The course covers Java development environment, major Java concepts, principles, structures, and functionality. Hands-on development exercises will explore software solutions to real-world problems. Upon completion of this course, the students will possess a solid foundation to core Java functionality and will be able to make informed decisions regarding Java's suitability to address workplace challenges.

Course Learning Outcomes

- 1) Describe the differences between traditional programming and object-oriented programming.
- 2) Explain concepts related to object-oriented programming, including classes, objects, methods, inheritance, polymorphism, interfaces, overloading vs. overriding, and encapsulation.
- 3) Design and develop programs in Java.
- 4) Apply object-oriented principles and approach to design and develop software systems.

Required Tools and Course Textbooks.

Java: The Complete Reference. Herbert Schildt, Danny Coward. 13th Edition, McGraw-Hill, 2024.

Course Schedule/Topics Covered.

Week	Topic(s)	Textbok reading	Assignments	Notes
week 1	<i>Introduction to OOP and Java</i>	Ch. 1 - 2	Exercise-1	
week 2	<i>Java Basics</i>	Ch. 3 - 4	Exercise-2, Project 1	E1 due
week 3	<i>Program flow control; Arrays; Strings; Input/Output</i>	Ch. 3,5,7	Exercise-3	E2 due
				P1 due
week 4	<i>Classes; Objects; Methods; Fields</i>	Ch. 6, 7	Exercise-4; Project 2	E3 due
week 5	<i>Command line args; Packages; Javadocs</i>	Ch. 8, 9		E4 due
week 6	<i>Inheritance; Polymorphism; Dynamic dispatch</i>	Ch. 8		P2 due
week 7		<i>Midterm Exam</i>		
week 8	<i>Abstract classes; Interfaces; Enums</i>	Ch. 9,12	Exercise-5, Project 3	
week 9	<i>Exceptions; Unit testing</i>	Ch. 10	Exercise 6	E5 due
week 10	<i>Generics</i>	Ch. 14	Exercise 7	E6 Due
week 11	<i>Collections, Lists & Queues</i>	Ch. 20	Exercise 8	
	<i>Veterans Day - No Class</i>			E7 due
				P3 due
week 12	<i>Recursion; Sort & search</i>	TBA	Project 4	E8 due
week 13	<i>Thanksgiving Break</i>	No class		
week 14	<i>Anonymous classes; Lambda functions;</i>	Ch. 15		P4 due
Exam week	<i>Final Exam</i>			

Assignment Grading

Material	Weight	Drop policy
Programming exercises (8)	15%	lowest one
Programming projects (4)	40%	none
Mid exam	15%	-
Final exam	25%	-
Other assignments	5%	-

Grading Scale

Percentage Range	Letter Grade	Point Equivalent
95-100%	A	4.000
90-94.9%	A-	3.667
87-89.9%	B+	3.333
84-86.9%	B	3.000
80-83.9%	B-	2.667
77-79.9%	C+	2.333
74-76.9%	C	2.000
70-73.9%	C-	1.667
69.9% or below	F	0.000

Incomplete Grades

An incomplete grade may be reported by the instructor when a student has failed to complete a major component of a required course, such as homework, a quiz or final examination, a term paper, or a laboratory project. Students may make up an incomplete grade by satisfying the requirements of the instructor. Be aware that instructors' policies on the granting of incomplete grades may vary and that the final decision on an incomplete grade is up to the instructor. Instructors may deny requests for an incomplete grade. If the missing assignment(s) have not been submitted to the instructor within 30 days from the end of the term in which the course was offered, or the agreed upon due date, the grade entered will reflect the student's grade in the course for the work completed and the missing assignments receiving no credit toward the final grade

Attendance/Late Work Policy

Attendance Policy

Students registered in MGEN courses (INFO, CSYE, and DAMG) are allowed **a maximum of 2 absences per course, with 3 or more absences resulting in an automatic 'F' for that course.** Students are expected to inform their instructors of any absences in advance of the class; if a student is sick long-term or experiences a medical issue that prevents class attendance, it is strongly encouraged that they speak

with their Academic Advisor (coe-mgen-gradadvising@northeastern.edu) to learn more about the Medical Leave of Absence. Should a student anticipate being unable to attend 3 or more classes, they should discuss their situation with their Academic Advisor to explore other types of leave in accordance with the University's academic and global entry expectations. International students should review the Office of Global Services webpage to understand their visa compliance requirements.

Teaching Assistants (TAs) or Instructional Assistants (IAs) will be present at each class to collect student attendance.

Late Work Policy

Students must submit assignments by the deadline in the time zone noted in the syllabus. Students must communicate with the faculty prior to the deadline if they anticipate work will be submitted late. Work submitted late without prior communication with faculty will not be graded.

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.

The following is a broad overview, but not an all-encompassing definition, of what constitutes a violation of academic integrity:

Cheating: The University defines cheating as using or attempting to use unauthorized materials, information, or study aids in any academic exercise. When completing any academic assignment, a student shall rely on their own mastery of the subject.

Fabrication: The University defines fabrication as falsification, misrepresentation, or invention of any information, data, or citation in an academic exercise.

Plagiarism: The University defines plagiarism as using as one's own the words, ideas, data, code, or other original academic material of another without providing proper citation or attribution. Plagiarism can apply to any assignment, either final or drafted copies, and it can occur either accidentally or deliberately. Claiming that one has "forgotten" to document ideas or material taken from another source does not exempt one from plagiarizing.

Unauthorized Collaboration: The University defines unauthorized collaboration as instances when students submit individual academic works that are substantially similar to one another. While several

students may have the same source material, any analysis, interpretation, or reporting of data required by an assignment must be each individual's independent work unless the instructor has explicitly granted permission for group work.

Participation in Academically Dishonest Activities: The University defines participation in academically dishonest activities as any action taken by a student with the intention of gaining an unfair advantage over other students.

Facilitating Academic Dishonesty: The University defines facilitating academic dishonesty as intentionally or knowingly helping or contributing to the violation of any provision of this policy.

Please visit <https://osccr.sites.northeastern.edu/academic-integrity-policy/> to access the full academic integrity policy.

MGEN Student Feedback

Students who would like to provide the MGEN unit with anonymous feedback on this particular course, Teaching Assistants, Instructional Assistants, professors, or to provide general feedback regarding their program, may do so using this survey: https://neu.co1.qualtrics.com/jfe/form/SV_cTIAbH7ZRaaW0Ki

University Health and Counseling Services

As a student enrolled in this course, you are fully responsible for assignments, work, and course materials as outlined in this syllabus and in the classroom. Over the course of the semester if you experience any health issues, please contact UHCS.

For more information, visit <https://www.northeastern.edu/uahcs>.

Student Accommodations/Disability Access Services (DAS)

Northeastern University and the Disability Access Services (DAS) 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, students must provide appropriate documentation as provided by the DAS office.

If the course is conducted in an on-ground (in-person) format, students are expected to attend class physically as scheduled. Professors are not required to provide virtual attendance links unless a student has documented accommodation approved by the Disability Access Services (DAS) office and their Academic Advisor. If a student requires accommodation for remote participation, they must submit a formal request through the Disability Office and coordinate with their Academic Advisor prior to the course start date.

For more information, visit <https://disabilityaccessservices.sites.northeastern.edu/>.

Office of Global Services

As an F-1, J-1, or Study Permit student, you must meet certain obligations in order to maintain lawful nonimmigrant status. Maintaining status is necessary in order to retain eligibility for the benefits of F-1 or J-1 status, such as employment authorization and program extension, and can be crucial to a successful application for a change or adjustment of nonimmigrant status in the future. Failure to maintain your

nonimmigrant status can result in serious problems with immigration and could lead to deportation from the U.S. or Canada.

Students must maintain on-ground presence throughout the academic term. At Northeastern, there are four different defined instructional methods: Traditional, Hybrid, Live Cast, and Online. Traditional, Hybrid, and Live Cast courses meet the Visas' on-ground presence requirements. Online courses do not meet the Visas' on-ground presence requirements.

Students enrolled in Summer courses should adhere to OGS guidelines on maintaining status during the Summer term.

For more information please visit, <https://international.northeastern.edu/ogs/current-students/understanding-visa-requirements/guidelines-on-maintaining-status/>

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 <https://library.northeastern.edu>
Network Campus Library Services: [Northeastern University Library Global Campus Portals](#)

24/7 Canvas Technical Help

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

Canvas Student Resources: <https://canvas.northeastern.edu/student-resources/>

For assistance with my Northeastern e-mail, and basic technical support:

Visit ITS at <https://its.northeastern.edu>

Email: help@northeastern.edu

ITS Customer Service Desk: 617-373-4357

Outreach, Engagement, Belonging

Northeastern University is committed to fostering a community of belonging, which is essential to the advancement of Northeastern University's mission of teaching and research. Our university is stronger as a result of the varied backgrounds, experiences, and perspectives that all members of our global community bring to the pursuit of knowledge. Embracing this pluralism is not the work of one office, department, or academic unit. It is a shared responsibility that spans disciplines and boundaries. By harnessing the power of our differences, we will continue to light the path to bold new ideas and life-changing discoveries. It is my intention that students from all backgrounds and perspectives will be well served by this course, and that the diverse experiences 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 belonging environment for every other member of the class. Your suggestions are encouraged and appreciated.

Please visit [Belonging at Northeastern – Northeastern Provost](#) for complete information.

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.

The Office for University Equity and Compliance (OUEC) leads Northeastern University's efforts in maintaining compliance with all federal, state, and provincial civil rights laws and prohibits discrimination within any of its programs, activities, and services. Please visit <https://ouec.northeastern.edu/> for more information and for the link to file a report.