INFO 5100: Application Engineering and Development

Northeastern University - Arlington Campus
College of Engineering
Fall 2024

1. Course Basics

Course Information:

Course Title:	Application Engineering and Development
Course Number:	INFO 5100
Credit Hour:	3
CRN:	17615
Course Format:	Lecture - In-Person

Instructor:

Name:	Tessema Mengistu (Ph.D.)
Email:	t.mengistu-at-northeastern-dot-edu
Webpage:	TBA
Hours:	Monday : 12:00 - 2:00 PM (Zoom) Thursday: 10:30 AM - 12:30 PM (Office)
Office:	TBA

Graduate Teaching Assistants:

Name:	Soumya Hukkeri
Email:	hukkeri.so-at-northeastern-dot-edu
Hours:	Tuesday: 12:00 PM - 2:00 PM Wednesday: 3:00 PM - 5:00 PM
Office:	TBA

Prerequisites: None
Format: Lecture
Lectures:

Section	Days	Times	Location
17615	Thursday	1:00 pm - 4:20 pm EST	Arlington Campus Tower 1505

Textbook: TBA

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

Tools:

- **CANVAS -** Canvas will be used for all official announcements, course modules, assignments, and grades.

- **PIAZZA -** Piazza will be used for online discussion; any information discussed on Piazza will be assumed to be known to students.
  - The discussion board on Piazza is required reading for all projects. You MUST read the discussion board for clarifications and project updates.
  - Course schedule, announcements, discussions, GTA contacts and office hours will be posted on Piazza too.
  - Do not e-mail course staff about programming problems; use the discussion board.
  - Use public posts on Piazza to discuss programming project requirements, and other material related to the course.
  - When prompted by a GTA, use private posts on Piazza to share portions of your code pertaining to your questions. **Do not share your project code in public posts**.
  - Email course staff only for logistical issues such as meeting outside of office hours, grading disputes, medical situations, etc. Email addresses are listed on above and on Piazza.

2. COURSE INFORMATION

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.

OUTCOMES

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

3. COURSEWORK

PROGRAMMING ASSIGNMENTS:

- *Programming Exercises*: programming assignments; open resources; collaboration/group work allowed; several days to submit.
- *Projects:* programming assignments; individual work; possibly more than a week to complete.

EXAMS: closed resource;individual work; online with in-person presence. You need Respondus browser lockdown installed to take the exam. Please refer here about respodus browser lockdown. You may also need to have a working webcam and microphone as well.

4. 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.

5. GRADING PROCEDURES

GRADE DISTRIBUTION

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 POLICIES

- Grades within a category (i.e. midterms, projects, labs) are weighted equally.
- Students must have Respondus Browser lockdown installed before taking any tests or exams. A working webcam is also required to take the final exam.
- The final exam is cumulative.
- Challenges to any grade must occur **within a week from the day an assignment grade is released**.
- Any number of resubmissions are allowed (the most recent is used), however a resubmission turned in after the deadline will be considered a late submission.
- Programming exercises grading are fully automated. Tests and final exam maybe hand-graded. Project grading is partially automated. Even when manually graded, code which does not compile will receive a zero in most cases.
- In general, make-ups are not allowed except on exams (under very special circumstances).
- Assignments are typically due at midnight on the listed due date.
- Late submission policy (up to 48 hours) is as follows: <=24 hours with 10% off, >24 hours &&<=48 hours with 25% off, > 48 hours will receive 0. Submission times are automatically recorded by Canvas, and there is no distinction between a minute late and a day late. Please plan ahead to make sure that your submission is on time. Taking backups regularly is highly recommended.

GRADING SCALE

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F
max	↑	92	89	86	82	79	76	72	69	66	59
min	93	90	87	83	80	77	73	70	67	60	↓

TIPS

- *Make backups*, because the unexpected happens, and cannot be used as an excuse to get an extension.
- Submission times are automatically recorded by Canvas, and there's no distinction between a tiny bit late and nearly a day late - plan ahead to make sure that your submission is on time.
- To receive a grade, the submission must be gradable. This means submitting `.java` source rather than compiled `.class` files or word documents containing the source. It also means that the code must be submitted on Canvas rather than simply saved.

6. END-OF-COURSE EVALUATION SURVEYS

Your feedback regarding your educational experience in this class is particularly important to the College of Engineering. 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 here.

. 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 Northeastern University Mail account notifying you when surveys are available.

7. **HONOR CODE**

Unless specific instructions are given to the contrary, programming assignments are an individual effort, no group work is allowed. In addition to code, this includes the sharing of test cases, pseudocode, or approaches, receiving assistance in debugging code, as well as the use of external Internet sites.

The [Academic Integrity Policy](#) strictly apply in this class. Any use of a direct contribution on any program, homework, quiz, or exam will be reported as a violation of the honor code.

We take the honor code quite seriously. Any attempts at copying or sharing code, algorithms, or other violations of the honor code simply will not be tolerated. We use automated software to flag suspicious cases, and then review them to find the cases that must be submitted to the Office of Academic Integrity. The penalty for cheating will always be far worse than a zero grade, to ensure it's not worth taking the chance. Confirmed cases of cheating almost always translate into course failure.

Some kinds of participation in online study sites violate the Northeastern University's Honor code: these include accessing exam or quiz questions for this class; accessing exam, quiz, or assignment answers for this class; uploading of any of the instructor's materials or exams; and uploading any of your own answers or finished work. Always consult your syllabus and your professor before using these sites.

8. **PRIVACY**

All course materials posted to Canvas or other course sites are private; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class. Video recordings of class meetings that include audio or visual information from other students are private and must not be shared. Live Video Conference Meetings (e.g. Zoom) that include audio or visual information from other students must be viewed privately and not shared with others.

9. **SPECIAL 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 mor information clieck [here](#) .

10. **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 mor information clieck [here](#) .

11. **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, click [here](#) . Network Campus Library Services: Northeastern University Library Global Campus Portals

12. **24/7 Canvas Technical Help**

For immediate technical support for Canvas, call 617-373-4357 or email help@northeastern.edu
Canvas Student Resources .
For assistance with my Northeastern e-mail, and basic technical support:

- Visit ITS
- Email: help@northeastern.edu
- ITS Customer Service Desk: 617-373-4357

13. **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. Please visit here 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 https://www.northeastern.edu/ouec for a complete list of reporting options and resources both on- and off-campus.

14. **Miscellaneous**

- Time Commitment

  This course is very time consuming. Students in this course who have a working background of Java should expect to spend about 10-12 hours per week involved in the activities and completion of assignments/projects over the semester. This is an average, with some weeks requiring more time, and some less, to complete all of the required assignments and activities. If you don't have a background in Java, the time requirement will be more.

  If you have a tight schedule for this semester and have concerns that you won't be able to spend that much time in this course, please consider carefully your available time.

- Communication

  If you have any questions related to projects, please use piazza execlusively. The chance of getting timely responses on piazza is very high.

  E-mail: Students who e-mail Monday - Thursday can ordinarily expect a response within 24 hours. Students who e-mail after 4 PM on Friday or over the weekend can ordinarily expect a response by noon on the following Monday.

- Grading Projects

Every effort will be made to return graded items within 7 days of the due date (including the late submission).

15. **PROGRAMMING ENVIRONMENT**

All programs in lab assignments must compile and run in at least Java SE 8 environment. You can compile and run your source code from the command line or you can choose to use any IDE you prefer, for example Eclipse (recommended), NetBeans, DrJava or BlueJ. All of the necessary software can be freely installed on your PC. For any technical questions regarding software installation, lab assignments, Java programming, and development environment, please consult the GTA/UTA first. Programming assignments that cannot be compiled or run will receive zero points.

16. **SCHEDULE**

Week	Date	Topic(s)	Textbbok reading	Assignments	Notes
week 1	09/04 -09/08	*Introduction to OOP and Java*	Ch. 1 - 2	Exercise-1	
week 2	09/09 - 09/15	*Java Basics*	Ch. 3 - 4	Exercise-2, Project 1	
	Monday, 09				E1 due
week 3	09/16 - 09/22	*Program flow control;Arrays; Strings;Input/Output*	Ch. 3,5,7	Exercise-3	
	Monday, 16				E2 due
	Sunday, 22				P1 due
week 4	09/23 - 09/29	*Classes; Objects; Methods; Fields*	Ch. 6, 7	Exercise-4; Project 2	
	Monday, 23				E3 due
week 5	09/30 - 10/06	*Command line args; Packages; Javadocs*	Ch. 8, 9		
	Monday, 30				E4 due
week 6	10/07 - 10/13	*Inheritance; Polymorphism; Dynamic dispatch*	Ch. 8		
	Sunday, 13				P2 due
week 7	10/14 - 10/20	*Midterm Exam*			
week 8	10/21 - 10/27	*Abstract classes; Interfaces; Enums*	Ch. 9,12	Exercise-5, Project 3	
week 9	10/28 - 11/03	*Exceptions; Unit testing*	Ch. 10	Exercise 6	
	Monday, 28				E5 due
week 10	11/04 - 11/10	*Generics*	Ch, 14	Exercise 7	
	Monday, 04				E6 Due
week 11	11/11 - 11/17	*Collections, Lists & Queues*	Ch. 20	Exercise 8	
	Monday, 11/11	Veterans Day - No Class			
	Tuesday, 12				E7 due
	Sunday, 17				P3 due
week 12	11/18 - 11/24	*Recursion;Sort & search*	TBA	Project 4	
	Monday, 18				E8 due

week 13	11/25 - 12/01	*Thanksgiving Break*	No class	
week 14	12/02 - 12/04	*Anonymous classes; Lambda functions;*	Ch. 15	
	Wednesday, 04			P4 due
Exam week	XX	*Final Exam*		

.