

CS 262: Object-oriented Programming II

Term: Fall 2022
Credits: 4
Lectures: 11:30 AM – 12:30 PM, MTF in HS 309
Lab: 11:30 AM – 12:30 PM, Th in HS 101C
Prerequisites: Math 108 or equivalent with a grade of C or better, or qualifying for a higher level mathematics via the Mathematics Placement Test, and CS 221 or equivalent with a grade of C or better.

Instructor

Instructor: Scott Summers
Email: summerss@uwosh.edu
Phone: 920-424-1324
Office: Halsey 220
Office hours: Indicated by the cells shaded in gray in the following table and subject to change.

	Mon	Tues	Wed	Thu	Fri
9:00 AM					
9:30					
10:00					
10:30					
11:00					
11:30					
12:00 PM					
12:30					
1:00					
1:30					
2:00					
2:30					
3:00					

As indicated above, I hold six total scheduled office hours per week. You don't need to schedule an appointment with me if you want to stop by during my scheduled office hours. If you want to meet virtually, via Microsoft Teams, then send me an email a few minutes before you'd like to meet, simply asking if I'm available to meet virtually. I'll respond as soon as I'm available. If you'd like to meet with me outside of my scheduled office hours, then please email me and we'll work out a time that works for both of us. If my office hours ever change, even for a single day, then I'll send the class updates via the course webpage.

Course description (outdated)

A second course in problem solving, software design, and computer programming using an object-oriented language. Problem solving/software design topics include: abstract data types, universal modeling language (UML), simple recursion, unit testing, event-handling, simple concurrency. Data structures and algorithms include: binary search, simple sorting algorithms, use of collection classes and their iteration protocols,

sequential file processing. Additional topics include: inheritance, polymorphism, graphical user interfaces, simple use of threads.

Course description (unofficial)

A second course in problem solving, software design and computer programming using an object-oriented language. Problem solving/software design topics include: abstract data types, generic types, universal modeling language (UML), recursion, event handling. Data structures and algorithms include: binary search, simple sorting algorithms, use of collection classes and their iteration protocols, sequential file processing. Additional topics include inheritance, polymorphism, exceptions, graphical user interfaces, simple database queries, simple network I/O.

Learning outcomes

At conclusion of the course, students will be able to:

1. use UML notation to describe the structure of a class and the relationship between classes,
2. identify relationships between classes, including composition, association, and aggregation,
3. create subclasses and superclasses for use in inheritance and polymorphism,
4. create and use abstract classes and interfaces,
5. identify generic types and their uses,
6. handle exceptions,
7. read from and write to files,
8. read from and write to files over a network,
9. write simple queries to retrieve data from a database,
10. create an event-driven program,
11. write recursive methods and identify the parts of a recursive method, and
12. identify when to use different data structures.

Course website

The course website is: <https://uwosh.edu/canvas/>. You should check Canvas on a regular basis, perhaps two or three times per day.

There is no required textbook

While there is no required textbook for this class, a good reference is *Intro to Java Programming, Comprehensive Version (10th Edition)*, by Daniel Liang.

I will present in class and lab all of the content that you will need to know to be successful in this course.

Course grade

Your final course grade will be based on the following types of assessment items.

10% QUIZZES

You will be given one quiz roughly every week. Quizzes will be taken at the end of class. Each quiz is equally-weighted. Calculators will not be allowed for any of the quizzes. Each quiz will test your knowledge of the material from roughly the prior week but older material may be covered depending on how the class performs on the prior quiz.

20% PROJECTS

There will be five programming projects. All programs will be equally-weighted.

10% LABS

There will be weekly labs. All labs are equally-weighted.

60% EXAMS

There will be three equally-weighted in-class exams. Exam material will come from the lecture notes, quizzes, programming projects and labs. There will be more information about each exam as it approaches. The actual exam dates will be announced in class at least one week before the exam. All exams will be taken during the regular class period.

Grading scale

Grading will be on a plus/minus system. Grading may be done on a curve depending on the overall performance of the class. If no curve is used, then your grade will be computed based on the following:

Percentage	Grade
> 91	A
> 89 and \leq 91	A-
> 87 and \leq 89	B+
> 81 and \leq 87	B
> 79 and \leq 81	B-
> 77 and \leq 79	C+
> 71 and \leq 77	C
> 69 and \leq 71	C-
> 67 and \leq 69	D+
> 61 and \leq 67	D
> 55 and \leq 61	D-
\leq 55	F

Re-grading

If you believe an assessment item (e.g., exam, etc.) was graded incorrectly or unfairly and would like to have it re-graded, please let me know about it in writing within one day of receiving the assessment item back. I will re-grade the entire assessment item and you may gain or lose points accordingly.

Late work

If you are unable to take a scheduled exam at its normal time, then ,it may be possible to take a make-up exam provided that you do both of the following, which are then subject to my approval:

1. Make arrangements prior to the scheduled exam (for last minute emergencies, call me at 920-424-1324 or leave a message at the Computer Science office, 920-424-2068. **No after-the-fact notifications will be accepted.**
2. Have a written medical excuse signed by the attending physician OR have a note of justification from the Dean of Students Office.

In some cases, only one make-up exam will be given. It will be a comprehensive exam given at an arranged time during the last week of the semester.

Late work will NOT be accepted. Late work is worth 0 points. Extensions may be granted at the discretion of the instructor if you provide a valid justification.

In general, the following are the only valid excuses for not completing or submitting an assessment item on time:

- Medical illness – provide to me an official note from a medical provider (or the Dean of Students) supporting your claim of a medical illness and describing its severity.
- Family death – provide to me the name of the deceased, the name of the funeral home, and your parent's address, to which I can send my condolences.
- Religious holiday – provide to me before the third week of the semester a list of all the dates of conflict.
- University-sanctioned events, e.g., athletic competition, student organization event, conference attendance, career fair, etc. – provide to me before the third week of the semester a list of all the dates of conflict, along with corresponding supporting documentation on official university letter head.

Work is not a valid excuse to miss class. Your job must work around school, and not the other way around.

If you have four or more unexcused absences, then I reserve the right to automatically fail you.

If you have six or more medical absences, then you must medically withdraw from the course.

Coding standards

In this class, you will write several short to medium-length Java programs. One of your goals (during this class and beyond, in Java or any programming language) should be to write understandable, readable code. You should be making every effort to document anything that might be confusing to a reader unfamiliar with your program using correct spelling and grammar, to name variables intelligently, to use indentation that reflects the code's organization, and so on. All of this will be taken into account during grading: poorly organized or written code may have a negative impact on your grade, even if the resulting program works fine. Briefly, your code must be formatted in a consistent and easily-readable manner. At a minimum, I will require that you utilize the auto-format feature of whatever development environment we use (e.g., "Auto-layout" in BlueJ).

One of the goals of this class is to teach you to write functioning programs in Java. Thus, your code must compile and run correctly in order for you to receive full credit. Code that does not compile will receive substantially less than full credit. Keep this in mind when writing programs: write your code in small pieces, making sure each piece works before moving on to the next one. It is much better to turn in a project that is not finished but has many working pieces than to turn in one that doesn't work at all, even though most of the code is written.

University policy on academic integrity

The University of Wisconsin Oshkosh is committed to a standard of academic integrity for all students. The system guidelines state: "Students are responsible for the honest completion and representation of their work, for the appropriate citation of source, and for respect of others' academic endeavors" (UWS 14.01, Wisconsin

Administrative Code).

Often, students are not aware of the ways to identify and avoid plagiarism. Therefore, it is important to educate yourself about how to give proper credit to sources that you use in your assignments. For writing assignments, you can consult the Purdue Owl website on how to identify and avoid plagiarism: <https://owl.english.purdue.edu/owl/resource/589/02/> and <https://owl.english.purdue.edu/owl/resource/589/03/>. This website outlines the strategies for avoiding plagiarism in this course. However, other courses may demand knowing other ways to identify and avoid plagiarism. Therefore, I encourage you to consult with me if it is unclear to you how you give proper credit to your sources of information.

According to the Dean of Students (see <https://uwosh.edu/deanofstudents/student-conduct/academic-misconduct/>), examples of academic misconduct include, but are not limited to:

- plagiarism (turning in work of another person and not giving them credit),
- stealing an exam or course materials,
- copying another student's homework, paper, or exam,
- cheating on an exam (copying from another student, turning in an exam for re-grading after making changes, working on an exam after the designated time allowance),
- providing solutions on online forums (e.g., Discord, etc.), and
- falsifying academic documents.

In sum, all material turned in for this course must be original. In this course, you may not re-use papers or projects from other sections of this course, from other courses you have completed, or other courses you are currently completing. This class is a specific event in your learning process. To learn, you must engage in the material and complete the work. Thus, work from other experiences is not acceptable. All work turned in that is plagiarized will receive a "0" in the course.

Accommodations

UW Oshkosh supports the right of all enrolled students to a full and equal educational opportunity. It is the University's policy to provide reasonable accommodations to students who have documented disabilities that may affect their ability to participate in course activities or to meet course requirements.

Students are expected to inform instructors of the need for accommodations as soon as possible by presenting an Accommodation Plan from either the Accessibility Center, Project Success, or both. Reasonable accommodations for students with disabilities is a shared instructor and student responsibility.

The Accessibility Center is part of the Dean of Students Office and is located in 125 Dempsey Hall. For more information, email accessibilitycenter@uwosh.edu, call 920-424-3100, or visit the Accessibility Center's website at <https://uwosh.edu/deanofstudents/accessibility-center/>.

Statement regarding diversity, equity & inclusion

Diversity drives innovation, creativity, and progress. At the University of Wisconsin Oshkosh, the culture, identities, life experiences, unique abilities, and talents of every individual contribute to the foundation of our success. Creating and maintaining an inclusive and equitable environment is of paramount importance to us. This pursuit prepares all of us to be global citizens who will contribute to the betterment of the world. We are committed to a university culture that provides everyone with the opportunity to thrive.

Required disclosure statement

Students are advised to see the following URL for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990:

<https://uwosh.edu/financialaid/consumer-information/>

Tentative daily schedule

The following is a tentative daily schedule (subject to change):

Date	Topic
Thursday, 9-8	Day 1 (Lab1): Attendance, syllabus, review some content from CS 221.
Friday, 9-9	Day 2: Review 1D arrays.
Monday, 9-12	Day 3: Review basics of object-oriented programming, classes, etc.
Tuesday, 9-13	Day 4: Object-oriented programming examples
Wednesday, 9-14	NO CLASS. Lab1 due at noon.
Thursday, 9-15	Day 5 (Lab2)
Friday, 9-16	Day 6: Basics of 2D arrays: declaration, initialization. Quiz 1 covering content from Days 2-5 (Days 2, 3, 4, and 5).
Monday, 9-19	Day 7: 2D array examples.
Tuesday, 9-20	Day 8: More 2D array examples.
Wednesday, 9-21	NO CLASS. Lab2 due at noon.
Thursday, 9-22	Day 9 (Lab3)
Friday, 9-23	Day 10: Recursion, recursive methods on integers. Quiz 2 covering content from Days 6-9.
Monday, 9-26	Day 11: Recursion on <code>Strings</code> and arrays, recursive binary search.
Tuesday, 9-27	Day 12: Computing Fibonacci numbers using recursion.
Wednesday, 9-28	NO CLASS. Lab3 due at noon.
Thursday, 9-29	Day 13 (Lab4)
Friday, 9-30	Day 14: Relationships between classes, composition, association, aggregation. Quiz 3 covering content from Days 10-13.
Monday, 10-3	Day 15: Inheritance and polymorphism, creating subclasses with <code>extends</code> .
Tuesday, 10-4	Day 16: Examples of polymorphism, overriding <code>equals</code> and <code>toString</code> .
Wednesday, 10-5	NO CLASS. Lab4 due at noon.
Thursday, 10-6	Day 17 (Lab5)

The tentative daily schedule is continued on the next page...

Continuation of tentative daily schedule:

Friday, 10-7	Day 18: abstract classes and interfaces. Quiz 4 covering content from Days 14-17.
Monday, 10-10	Day 19: The Comparable interface.
Tuesday, 10-11	Day 20: Numbers, BigInteger.
Wednesday, 10-12	NO CLASS. Lab5 due at noon.
Thursday, 10-13	Day 21: NO LAB. Review for Exam 1 in HS 101C.
Friday, 10-14	Day 22: Exam 1 covering content from days 1-21.
Monday, 10-17	Day 23: Exceptions.
Tuesday, 10-18	Day 24: Exception handling
Wednesday, 10-19	NO CLASS.
Thursday, 10-20	Day 25 (Lab6)
Friday, 10-21	Day 26: Sequential text file processing. Quiz 5 covering content from Days 23-25. Last Day to Drop Without Late Drop Request Form OR Withdraw.
Monday, 10-24	Day 27: Opening, reading from and writing to text files.
Tuesday, 10-25	Day 28: Opening, reading from and writing to files over a network.
Wednesday, 10-26	NO CLASS. Lab6 due at noon.
Thursday, 10-27	Day 29 (Lab7)
Friday, 10-28	Day 30: JavaFX, Application. Quiz 6 covering content from Days 26-29.
Monday, 10-31	Day 31: Using simple 2D graphics in JavaFX.
Tuesday, 11-1	Day 32: Event-driven programming and handling events in JavaFX.
Wednesday, 11-2	NO CLASS. Lab7 due at noon.
Thursday, 11-3	Day 33 (Lab8)
Friday, 11-4	Day 34: Binding in JavaFX. Quiz 7 covering content from Days 30-33.
Monday, 11-7	Day 35: Simple 2D animation in JavaFX in JavaFX.
Tuesday, 11-8	Day 36: User interface elements in JavaFX.
Wednesday, 11-9	NO CLASS. Lab8 due at noon.
Thursday, 11-10	Day 37: NO LAB. Review for Exam 2 in HS 101C.

The tentative daily schedule is continued on the next page...

Continuation of tentative daily schedule:

Friday, 11-11	Day 38: Exam 2 covering content of all the days since the last exam.
Monday, 11-14	Day 39: Databases in Java.
Tuesday, 11-15	Day 40: Writing simple queries to retrieve data from a database.
Wednesday, 11-16	NO CLASS.
Thursday, 11-17	Day 41 (Lab9)
Friday, 11-18	Day 42: Generics, using generic types, generic Comparable interface. Quiz 8 covering content from Days 39-41.
Monday, 11-21	Day 43: Creating generic types, wildcard types.
Tuesday, 11-22	Day 44: Defining generic search and sort methods.
Wednesday, 11-23	NO CLASS.
Thursday, 11-24	NO CLASS. Thanksgiving break.
Friday, 11-25	NO CLASS. Thanksgiving break.
Monday, 11-28	Day 45: Java Collections framework.
Tuesday, 11-29	Day 46: The List ADT, ArrayList , LinkedList , tradeoffs.
Wednesday, 11-30	NO CLASS. Lab9 due at noon.
Thursday, 12-1	Day 47 (Lab10)
Friday, 12-2	Day 48: The Set ADT, TreeSet , HashSet , tradeoffs. Quiz 9 covering content from Days 42-47.
Monday, 12-5	Day 49: The Iterator interface, iterating over TreeSets and HashSets .
Tuesday, 12-6	Day 50: The Comparator interface.
Wednesday, 12-7	NO CLASS. Lab10 due at noon.
Thursday, 12-8	Day 51 (Lab11)
Friday, 12-9	Day 52: The Map ADT, TreeMap , HashMap , tradeoffs. Quiz 10 covering content from Days 48-51.
Monday, 12-12	Day 53: Selecting the right data structure.
Tuesday, 12-13	Day 54: Review for Exam 3. Student Opinion Surveys.
Wednesday, 12-14	NO CLASS. Lab11 due at noon.
Thursday, 12-15	Day 55: Exam 3 covering ALL course content, but focusing on the content of all the days since the last exam.
Friday, 12-16	Day 56: Make-up exams.