

Course Syllabus

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Object-Oriented Programming, CSE 271

Department of Computer Science and Software Engineering

Course Information:

- **Instructor:** Dr. Suman Bhunia
 - E-mail: bhunias@miamioh.edu
 - Office: 205-H Benton Hall
 - Office hours: Monday & Wednesday 10 AM - 11 AM. If you can't make it to my office hours, send me an email to schedule a meeting.
 - Zoom personal Room: <https://miamioh.zoom.us/j/4221413978> (<https://miamioh.zoom.us/j/4221413978>)
 - Phone: (513) 529 0339
- **Class Interaction:**
 - **Lectures:** Monday and Wednesday at 2:15 PM - 4:05 PM PM
 - **Zoom Link:** <https://miamioh.zoom.us/j/84842745898?pwd=OFIzSF10cUFYjMRFNpNIIYSGRhUT09> (<https://miamioh.zoom.us/j/84842745898?pwd=OFIzSF10cUFYjMRFNpNIIYSGRhUT09>)
 - **Examinations:** Tuesday at 8:00 PM - 9:20 PM (note: this is NOT a regular meeting time - this is only for proctored exams)
- **Course Site:** Canvas
- **TA help sessions:**
 - Nero Tran Huu (tranhuq@miamioh.edu) : Tuesday 6-8 pm.
 - Kareem Ghumrawi (ghumraka@miamioh.edu): Saturday 6-8 pm.
 - Zoom meeting link: <https://miamioh.zoom.us/j/87999618112?pwd=ZUtycDNJNTFPYjIkdik3NTBEL1M4Zz09> (<https://miamioh.zoom.us/j/87999618112?pwd=ZUtycDNJNTFPYjIkdik3NTBEL1M4Zz09>)

[pwd=ZUtycDNJNTPYIIJdlk3NTBEL1M4Zz09\)](https://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/oxygenr)

- **Required Materials:**

- **Textbook:** Big Java: Late Objects By Cay S. Horstmann
- **Software:** Java SE Development Kit (JDK) - JDK 8, and [Eclipse IDE \(https://www.eclipse.org\)](https://www.eclipse.org).
(<http://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/oxygenr>)

Course Description

Overview

The design and implementation of software using object-oriented programming techniques including inheritance, polymorphism, object persistence, and operator overloading. Students will analyze program specifications and identify appropriate objects and classes. Additional programming topics include dynamic memory recursion, using existing object libraries, and binary/ASCII file processing.

CSE 271 is a second-tier course in the CSE2 "Computer Programming" thematic sequence.

Computer software plays an important role in our daily lives: Our mobile phones, laptop computers, online banking, Internet applications such as YouTube, video games and movies, cars, and almost all aspects of daily life are touched by software. In your personal and professional life you will utilize computer software. It is also likely that you will select, or even influence the design of, software that is used in your professional or personal life. This thematic sequence will give you a deep understanding of how software works and is created, its limitations, and its potential. You will be able to read software and therefore be able to make informed decisions when selecting or participating in the design of business, scientific, or information systems that utilize computer software.

The CSE2 thematic sequence consists of both of the following introductory computer programming courses.

- [CSE 174 \(http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-174/index.html\)](http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-174/index.html), Fundamentals of Programming and Problem Solving
- [CSE 271 \(http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-271/index.html\)](http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-271/index.html), Object-Oriented Programming

Followed by one of the following courses

- [CSE 252 \(http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-252/index.html\)](http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-252/index.html), Web Application Programming
- [CSE 274 \(http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-274/index.html\)](http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-274/index.html), Data Abstraction and Data Structures
- [CSE 283 \(http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-283/index.html\)](http://www.miamioh.edu/cec/academics/departments/cse/academics/course-descriptions/cse-283/index.html), Data Communications and Networks

CSE 271 is a course in which you build upon the programming concepts and techniques learned in CSE 174 to design and implement more sophisticated programs using object-oriented design and programming

techniques.

Student Learning Objectives

By the end of this course, you should be able to:

1. Design and implement robust computer programs using object oriented programming techniques.
2. Use permanent storage to preserve the state of a program
3. Use recursion as a problem solving technique
4. Describe and implement sorting algorithms
5. Design and develop applications with a graphical user interface

Prerequisites

CSE 174 (with C- or above) or equivalent

Class Attendance Policy

All students are required attend the Lecture sessions over Zoom, and complete the associated quiz(zes) by the appropriate deadlines; this constitutes participation in the content dissemination portion of the course.

Course Webpage & Communication

All course content (videos, announcements, handouts, assignments, etc.) will be posted on the Canvas page for this course. We will use Canvas for all assignment submissions, as well as for the use of discussion boards, grading, and other means of communication. **You should ensure that your settings enable you to receive course announcements directly to your Miami email address so that you are immediately notified of any updates.**

Important dates:

- First day of class: 25 January
- Final day to drop (no letter grade assigned): Thursday, February 11
- Tentative Midterm Exam March 16 (8-9:20 PM EST)
- Last day to withdraw (grade of "W" assigned): Thursday, April 1
- Final exam: Monday 12:45 PM - 2:45 PM - 05/10/21

Course Grading

Your grade will be determined as follows

Deliverable Weightage

Midterm exam	25%
Final Exam	20%
Projects	25%
Labs	20%
Quizzes	10%
Total	100%

Exams: There will be one midterm exam, and one final exam. All exams are cumulative, closed-book. **No make-ups for missed exams.** If you are absent for an exam, your grade for that exam will be zero.

Projects: There will be 5 projects throughout the semester almost equally spaced. All projects need to be submitted using Canvas site by the due time. **Late work**, resubmissions, submissions sent by e-mail, and so on will not be accepted. **Always back up your electronic work!** Computer/network failures are a fact of life, and are not justification for an extension. **WRITE YOUR CODE ALONE...**learn to help one another without sharing any code.

Labs: Each week, the content covered will be applied through a guided lab assignment. The labs will be available in the morning of your scheduled lab day, and you may begin on your own prior to the scheduled lab time. The in person lab session is your opportunity to work with the instructor and/or TAs to work through the problems and address any issues you may have.

Quizzes: There will be quizzes in this class. **Online quizzes** are given using the course website. These will be given roughly once or twice per week.

Letter Grading Conversion:

Grade	Percentage Range	Grade	Percentage Range	Grade	Percentage Range
A+	97-100%	A	94-96.9%	A-	90-93.9%
B+	87-89.9%	B	84-86.9%	B-	80-83.9%
C+	77-79.9%	C	74-76.9%	C-	70-73.9%
D+	67-69.9%	D	64-66.9%	D-	60-63.9%
F	Less than 60%				

Tentative Course Outline

[The weekly coverage might change as it depends on the progress of the class.]

Week	Topics (subject to change)	Lab and Project Assignments (Publish date-Submission date)
1 Jan 25, 27	Syllabus + Intro to Eclipse + Review of CSE 174 (Chapters 1-7) <ul style="list-style-type: none"> • Decisions, Loops, Methods • format (), printf() • Using the split () method • Arrays, ArrayList 	Lab_Assignment_0_Git (Jan 25-26)
2 Feb 1,3	Review of CSE 174 (Cont'd) (Chap 1-7) <ul style="list-style-type: none"> • File IO using Scanner & PrintWriter • Exception Handling 	Lab_Assignment_01_Java_Review (Feb 1-2) Project 01: File Read/Write, String, Array, Try-Catch-Finally, Exception Handling (Feb 1-14)
3 Feb 8,10	Object and Classes (Chapter 8) <ul style="list-style-type: none"> • Properties (Instance properties / Class level properties {static}) • Methods (Instance methods / Class level methods) • Getters / Setters • Overloading methods • Object Reference 	Lab_Assignment_02_File_IO_Try_Catch (Feb 8-9)
4	Object and Classes (Chap 8)	Feb 17 is Wellness day

<p>Feb 15</p>	<p>(Cont'd)</p> <ul style="list-style-type: none"> • Constructors <ul style="list-style-type: none"> ◦ Empty ◦ Partial ◦ Workhorse ◦ Copy • equals() (ch. 9) • toString() (ch. 9) • Using the instance of Operator (ch. 9) • Using Javadoc 	<p>Lab_Assignment_03: Class (Feb 15-21)</p>
<p>5 Feb 22, 24</p>	<p>Testing and Debugging code:</p> <ul style="list-style-type: none"> • JUnit tests • Using Eclipse Debugger 	<p>Lab_Assignment_04: Javadoc_Constructor_Setter_Getter_Driver (Feb 22-23)</p> <p>Project 02: Class, File, Javadoc, Junit (Feb 22 - March 7)</p>
<p>6 March 1, 3</p>	<p>Inheritance and Interfaces (Chap 9)</p> <ul style="list-style-type: none"> • Inheritance • Overriding Methods • Polymorphism • Dynamic Linking 	<p>Lab_Assignment_05_JUnit Testing (March 1-2)</p>

7 March 8, 10	Inheritance and Interfaces (Cont'd) <ul style="list-style-type: none"> • Abstract Classes • Interfaces • UML Diagram 	Lab_Assignment_06_Inheritance (March 8-10) Project 03: Inheritance and Interface (March 8 - March March 28)
8 March 15, 17	GUI and Graphics (Chapter 10) <ul style="list-style-type: none"> • JFrame • JPanel • Event Handling • Creating inner classes 	Lab_Assignment_07_Interface (March 15-16) Tentative MidTerm Exam March 16 (8-9:20 PM EST) Mid-course Internal Evaluation Survey and Feedback (March 15-21)
9 March 22, 24	Advance Graphics (Chapter 11) <ul style="list-style-type: none"> • Drawing • Using the Timer class • Using smooth graphics • Using Eclipse Swing Builder 	Lab_Assignment_08_GUI_Event (March 22-23)
10 March 29, 31	Recursion (Chapter 13) <ul style="list-style-type: none"> • Recursive methods (Worker and Helper methods) • Evaluating the effectiveness of a recursive method – is it reasonable for production 	Lab_Assignment_09_GUI_Graphics (March 29-30) Project 04: Graphical User Interface and Exception (March 29 - April 11)
11 April 5, 7	Sorting (Chapter 14) <ul style="list-style-type: none"> • Sorting 	Lab_Assignment_10_Recursion (April 5-6)

	<ul style="list-style-type: none"> • Selection • Insertion 	
12 April 14	Sorting (Chapter 14) <ul style="list-style-type: none"> • Merge • Quicksort 	March 12 is Wellness day
13 April 19, 21	Searching (Chapter 14) <ul style="list-style-type: none"> • Searching • Linear • Binary 	Lab_Assignment_11_Sorting (April 19-20) Project 05: Sorting_Searching (April 19 - May 2)
14 April 26, 28	Advanced_File_Input_Output (Chapter 19 & 20) <ul style="list-style-type: none"> • Stream Processing • Binary File • Random Access File 	Lab_Assignment_12_Searching (April 26-27)
15 May 3, 5	Java Collections Framework (Chapter 15) <ul style="list-style-type: none"> • List • Set • Map 	Lab_Assignment_13_Advanced File_IO: (May 3-4)
	FINAL EXAM	TBD

Notices and Resources

Copyright Disclaimer

Course materials provided to you, including presentations, tests, outlines, and similar materials, are copyright protected by the faculty member(s) teaching this course. You may make copies of course materials solely for your own use. You may not copy, reproduce, or electronically transmit any course materials to any person or company for commercial or other purposes without the faculty member's express permission. Violation of this prohibition may subject the student to discipline/suspension/dismissal under the Miami's Code of Student Conduct or Academic Integrity Policy.

Recording of Course Interactions

Synchronous sessions in this course (Lecture and Laboratory sessions) will be recorded or live-streamed. Such recordings/streaming will only be available to students registered for this class. The faculty member will provide you notice if any of these recordings/streaming will be shared with anyone outside of this course, and will obtain your prior written consent before sharing. These recordings are the intellectual property of the faculty member and Miami University and may not be shared or reproduced without the explicit, written consent of the faculty member and Miami University. Further, students may not share these sessions with those not in the class, or upload them to any other online environment. Doing so would be a breach of the Code of Student Conduct.

Disability Services

If you are a student with a physical, learning, medical and/or psychiatric disability and feel that you may need a reasonable accommodation to fulfill the essential functions of the course that are listed in this syllabus, you are encouraged to contact the Miller Center for Student Disability Services at 529-1541 (V/TTY), located in the Shriver Center, Room 304.

If you have an accommodation you think you will not need to use for this course, request it anyway. We cannot honor accommodation requests until they have gone through Student Disability Services.

Mental Health Services

If you are a student who may be experiencing mental or emotional distress, you are encouraged to call Student Counseling Service (513-529-4634). For emergencies outside of business hours, the Community and Counseling and Crisis Center (844-427-4747) has a 24-hour hotline.

Academic Support

The following resources are available for you as a student:

- [Rinella Learning Center Academic Support. \(https://miamioh.edu/student-life/rinella-learning-center/academic-support/index.html\)](https://miamioh.edu/student-life/rinella-learning-center/academic-support/index.html)
- [Howe Center for Writing Excellence. \(http://miamioh.edu/hcwe/\)](http://miamioh.edu/hcwe/)
- [International Student Resources. \(https://miamioh.edu/academics/intl-student-resources/index.html\)](https://miamioh.edu/academics/intl-student-resources/index.html)
- [Student Success Center. \(https://miamioh.edu/emss/offices/student-success-center/about/index.html\)](https://miamioh.edu/emss/offices/student-success-center/about/index.html)

Taking notes

- You will sometimes be provided with electronic presentations to give you basic information. These are not a substitute for taking notes.
- Take notes during videos and activities.
- Lab activities will often depend on you to use what you wrote in your notes.
- "Good notes" does not mean "Write everything". Be selective.
- Focus on writing sample code, diagrams, "notes to self".

Academic Integrity Information

The Department of Computer Science and Software Engineering is committed to maintaining strict standards of academic integrity. The department expects each student to understand and comply with the [University's Policy on Academic Integrity \(http://www.miamioh.edu/integrity/\)](http://www.miamioh.edu/integrity/) and the undergraduate student handbook and graduate student handbook. Students may direct questions regarding academic integrity expectations to their instructor or to the department chair. All work submitted must be original for that class. Submitting the same project for two different classes is grounds for charging a student with academic misconduct unless prior written permission is received from both instructors.

"Problem Solving Assignments" are assignments that involve programming, math, proofs, derivations, and puzzles.

The purpose of a problem solving assignment is for you to develop the skills necessary to solve similar problems in the future. To learn to solve problems you must solve the problems and write your solutions independently.

It is worth reiterating that the important aspect of the assignment is that you actually create the solution from start to finish; simply copying a solution and then understanding it after the fact is not a substitute for actually developing the solution.

The notion of academic integrity can be confusing in courses with substantial problem solving because certain forms of collaboration and investigation are permitted, but you are still required to complete your assignment independently. The following scenarios are meant to help distinguish between acceptable and unacceptable levels of collaboration and research, but are not all-inclusive:

ACCEPTABLE:

- Consulting solutions from the current course textbook, but not from other published sources.
- Seeking help on how to use the programming environment such as the editor, the compiler, or other tools.
- Seeking help on how to fix a program syntax error or how a certain language feature works.
- Discussing strategies with a fellow student on how to approach a particular problem. This discussion should not include significant sections of completed work or source code (including printouts, email, viewing on a monitor). Discussions should begin with a clean sheet of paper and end with conceptual drawings and/or pseudo-code.