Grand Valley State University
School of Computing and Information Systems
CIS 163 – Computer Science II
Spring 2021

Instructor Information

	Dr. Zachary Kurmas	Dr. Robert Adams
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Course Description

Programming methodology, design and analysis of algorithms, and an introduction to data structures. Examples from a wide range of computing applications will be discussed.

Prerequisite

CIS 162 (Computer Science I) – Previous students of CIS163 suggest a B or better

Course Materials

- Text Book: John Lewis, Peter DePasquale, and Joseph Chase, *Java Foundations – Introduction to Program Design & Data Structures*, 4th edition, or 3rd edition Addison Wesley, 2011.
- Supplemental materials on instructors' web sites

Course Objectives

After completing the course, students will be able to:

· develop good quality programs in Java consisting of several collaborating classes.
· manipulate fundamental data structures: arrays, strings, linked lists, stacks, and queues.
· solve problems using object-oriented principles (inheritance, polymorphism, abstract and interface classes, containers/collections, and iterators).
· use UML class diagrams to represent design of object-oriented programs.
· analyze run-time performance of algorithms using Big-Oh notation.
· use an IDE (Eclipse/NetBeans/IntelliJ/VS Code) for Java program development.
· interpret technical programming documentation (Java API).

Course Topics

· Arrays
· Inheritance, Polymorphism

- Interfaces
- Exceptions
- Graphical User Interfaces
- Recursion
- Searching and Sorting
- Analysis of Algorithms
- Generics and Collections, Lambda and Streams
- Data Structures – Linked Lists, Stacks, and Queues
- Testing and Debugging
- UML Class diagrams

Instructors' Expectations

The instructor expects students to:

- attend class **regularly** and **on time**.
- participate in class activities.
- ask questions in class.
- write professional-quality Java code: well-designed, well-formatted, well-commented, and readable.

Special Needs

If there is any student in this class who has special needs because of a disability, please contact Disability Support Services (DSS) at 616-331-2490.

Academic Honesty

All students are expected to adhere to the academic honesty standards set forth by Grand Valley State University. In addition, students in this course are expected to adhere to the academic honesty guidelines as set forth by the School of Computing and Information Systems, the details of which can be found at http://www.cis.gvsu.edu/Academics/Honesty/.

Grading

- Last day to drop a course with a grade of "**W**" is **Friday, June 25, 2021, 5:00pm**.
- **IMPORTANT: The instructor reserves the right to invoke the following:** In order to pass this course with a grade of C or better, you must have an average of at least 60% in exams (tests, final exam, and Lab exam).
- Your grade in the course will be determined based on all the work assigned (see table below) in the course using the grading scale shown below.

Programming Project 1	12%
Programming Project 2	12%
Programming Project 3	12%
Test 1 (mid term)	16%

Final Exam	20%
Lab Exam	18%
Engagement in Labs and Class time	10% (5% Kurmas, 5% Adams)

Grading Scale

A	94%	**C**	73%
A-	90%	**C-**	70%
B+	88%	**D+**	67%
B	84%	**D**	60%
B-	80%	**F**	below 60%
C+	77%		

Programming Projects

Programming projects require a **considerable** amount of time outside of class. I advise you to budget your time properly. You are encouraged to discuss the assignment specifications with your instructor (and with your fellow students). However, anything that you submit for grading must be your own work.

Programming Projects – Submission & Late Policy.

- Late penalty is 20% first day, plus an additional 10% per day after (unless stated in the assignment). Weekend counts as one weekday. Projects will not be accepted after one week late.
- You will be required to demo your project to the instructor.

Course Policies

- All homework and programming projects, unless otherwise specified by the instructor, are to be completed individually. Students are encouraged to consult each other for instructional assistance only.
- The instructor reserves the right to modify course policies, the course calendar, and assignment point values and due dates.

Tentative Schedule

Week	Week Of	Lecture/Topic	Project	Lab / Projects due at start of Lab
1	5/10	CIS 162 Review: Chapters 1 – 5 Using IDE (VS Code)	**Assign: Project 1**	Lab 1 Intro to VS Code
2	5/17	References (Review) Testing and JUnit Debugging in VS Code		Lab 2
3	5/24	Arrays – Chapter 7, Inheritance – Chapter 8	**Due Project 1**	Lab 3
4	5/31 Mem Day	Polymorphism, Interfaces – Chapter 9	**Assign: Project 2**	
5	6/7	UML Recursion – Chapter 11		Lab 4
6	6/14	Exceptions – Chapter 10, **review**		Lab 5
7	6/21	Analysis of Algorithms – Chapter 12	**Midterm Exam** **Due: Project 2** **Kurmas (last day on Wed)**	Lab 6
8	6/28	Analysis of Algorithms – Chapter 12 General helps with projects before break	**Adams (first day on Monday)** **Assign Project 3**	Lab 7
9	7/5 (**No class Monday**)	Searching (Linear and Binary) – Chapter 13 Sorting (Selection, Bubble, Insertion)		
10	7/12	Sorting (Quick and Merge) – Chapter 13 Linked Lists – Chapter 14		Lab 8
11	7/19	Linked Lists – Chapter 14		Lab 9

12	7/26	Help with the project Stacks – Chapter 15 Queues – Chapter 15	**Due: Project 3**	Lab 10
13	8/2			**Lab exam**
14	8/9	Mon: Review **Wed: Final Exam: August 11, 2021**		