**Grand Valley State University**

**School of Computing and Information Systems**

**CIS 163 – Computer Science II**

**Spring 2020**

**Instructor Information**

|  |  |  |
| --- | --- | --- |
|  | Dr. Zachary Kurmas |  |
| Office | C-2-316 |  |
| Phone | 616-331-8688 |  |
| Email | kurmasz[@gvsu.edu](mailto:kurmasz@gvsu.edu) |  |
| Web | <https://www.cis.gvsu.edu/~kurmasz> |  |

**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.

**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.
* develop graphical user interfaces and event-driven programs.
* analyze run-time performance of algorithms using Big-Oh notation.
* use an IDE (Eclipse/NetBeans/IntelliJ/Visual Studio Code) for Java program development.
* interpret technical programming documentation (Java API).

**Course Topics**

* Arrays
* Inheritance, Interfaces, Polymorphism
* 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

**Instructor’s 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.

**Instruction Format**

Lectures will be delivered synchronously using Blackboard Collaborate. All students are expected to participate in lecture and lab during the scheduled time.

**Special Needs**

If there is any student in this class who has special needs because of a disability, please contact [Disability Support Services](http://www.gvsu.edu/dss/) (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/>.

This course is subject to the GVSU policies listed at <https://www.gvsu.edu/coursepolicies/>. (See *University Policies*SG 3.04.C for more details.)

**Grading**

* Last day to drop a course with a grade of "**W**" is **Friday,** **June 19, 2018, 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% |
| Attendance/Participation in Labs and Class time | 10% |

**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 **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 | 5/4 | CIS 162 Review: Chapters 1 – 5  Using IDE (IntelliJ) | **Assign: Project 1** | Lab 1 Intro to IntelliJ |
| 2 | 5/11 | References (Review)  Testing and JUnit  Debugging in IntelliJ |  | Lab 2 |
| 3 | 5/18 | Arrays – Chapter 7,  Inheritance – Chapter 8 | **Due Project 1** | Lab 3 |
| 4 | 5/25  Mem Day | Polymorphism, Interfaces – Chapter 9 | **Assign: Project 2** | Lab 4 |
| 5 | 6/1 | UML  Recursion – Chapter 11 |  | Lab 5 |
| 6 | 6/8 | Exceptions – Chapter 10, **review** |  | Lab 6 |
| 7 | 6/15 | Analysis of Algorithms – Chapter 12 | **Midterm Exam**  **Due: Project 2** | Lab |
| 8 | 6/22 | Analysis of Algorithms – Chapter 12  General helps with projects before break | **Assign Project 3** | Lab 7 |
| 9 | 6/29  (Wed is the 4th) | Searching (Linear and Binary) – Chapter 13  Sorting (Selection, Bubble, Insertion) |  | Lab 8 |
| 10 | 7/6 | Sorting (Quick and Merge) – Chapter 13  Linked Lists – Chapter 14 | **Assign: Project 4** | Lab 9 |
| 11 | 7/13 | Linked Lists – Chapter 14 | **Due: Project 3** | Lab 10 |
| 12 | 7/20 | Help with the project  Stacks – Chapter 15  Queues – Chapter 15 |  | Lab11 |
| 13 | 7/27 | Clean up | **Due: Project 4**  **Lab exam.** | **Lab exam.** |
|  |  | **Final Exam: August**3, 2020 | | |

| **Event** | **Date** |
| --- | --- |
| Registration Drop and Add | March 16 - May 8 |
| Payment Deadline | April 24 by 5:00 pm |
| Classes Begin - 1st 6 and 12 weeks | May 4 |
| 100% Tuition Refund Deadline - 1st 6 and 12 weeks | May 8 by 5:00 pm |
| Last Day to Add or Register - 1st 6 and 12 weeks | May 8 by 5:00 pm |
| 75% Tuition Refund Deadline - 1st 6 weeks | May 15 by 5:00 pm |
| Memorial Day Recess | May 25 |
| 75% Tuition Refund Deadline - 12 weeks | May 29 by 5:00 pm |
| Drop with a "W" Grade Deadline - 1st 6 weeks | June 5 |
| Classes End - 1st 6 weeks | June 15 |
| Examinations - 1st 6 weeks | June 16-17 |
| Drop with a "W" Grade Deadline - 12 weeks | June 19 |
| Classes Begin - 2nd 6 weeks | June 22 |
| Grades Due from Faculty | June 22 by 12:00 pm |
| 1st 6 weeks Grades Available to Students | June 24 |
| Last Day to Add or Register - 2nd 6 weeks | June 26 by 5:00 pm |
| 100% Tuition Refund Deadline - 2nd 6 weeks | June 26 by 5:00 pm |
| Independence Day Recess | July 3 |
| 75% Tuition Refund Deadline - 2nd 6 weeks | July 6 by 5:00 pm |
| Drop with a "W" Grade Deadline - 2nd 6 weeks | July 24 |
| Classes End - 2nd 6 and 12 weeks | August 1 |
| Examinations - 2nd 6 and 12 weeks | August 3-4 |
| Grades Due from Faculty - 2nd 6 and 12 weeks | August 10 by 12:00 pm |
| Grades Available to Students - 2nd 6 and 12 weeks | August 12 |