

CS 149: Programming Fundamentals

James Madison University, Fall 2016 Semester, 3 Credits

Home Page: <http://w3.cs.jmu.edu/weikleda/cs149>

Class Times

Section 1: M/W/F, 10:10 – 11:00 Final Exam: Friday, 12/16/16 8-10 am

Section 2: M/W/F, 11:15 – 12:05 Wednesday, 12/14/16 10:30-12:30

Locations: ISAT/CS 236 (classroom) ISAT/CS 143 (Linux lab)

Your Instructor

Dr. Dee A. B. Weikle

weikleda@jmu.edu

Office: ISAT/CS 205

Phone: 540-568-5013



Office Hours: MWF 2-3 pm, Th 2-4
(no appointment necessary)

Other times available by appointment via email, you are welcome to stop by if my office door is open without an appointment. I will rarely be in the office on Tuesdays though.

Goals and Objectives

Official course description: Students learn fundamental problem-solving techniques using a modern programming language. This course covers same material as CS 139, but at an accelerated pace for students with programming experience. *Note that the accelerated pace is really just without an extra hour of supervised lab practice. There are opportunities for you to get that extra time with support in this class but you will have to arrange it yourself either by coming to my office hours or those of the undergraduate TAs.*

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

- 1) Explain fundamental programming concepts (e.g, variables, methods, decisions, loops, arrays, objects) using appropriate terminology.
- 2) Describe basic elements of high-level programming languages, including expressions, statements, functions, modules, and libraries.
- 3) Read and interpret software specifications and write source code from them.
- 4) Use automated software tools and processes to test your programs thoroughly.
- 5) Distinguish appropriate collaboration from cheating on assignments and exams.
- 6) Evaluate your own work for compliance with requirements and style guidelines.
- 7) Collaborate effectively with the majority of your peers
- 8) Develop correct and efficient algorithms to solve problems using computation.

Methods of Instruction

If you're hoping for lectures day after day, you've signed up for the wrong class. Research has shown that active learning methods are more effective than passively taking notes. This course uses three instructional strategies: Process Oriented Guided Inquiry Learning (for Monday activities) and Flipped Classroom (for some Wednesday and Friday labs), and occasionally Peer Instruction on Wednesday. Friday labs will usually be run using pair programming.

Here is the weekly routine: We will begin each week with a group activity to help you understand core concepts and develop process skills. In preparation for Wednesday, you will read from the textbook and complete a short online quiz. I will use the quiz results to customize instruction and clarify any misunderstandings about the course material. Wed and Friday will apply concepts hands-on and allow you to practice programming when it's easy to ask questions. Most weeks I will also provide a video to reinforce concepts and optional exercises to help you prepare for the exams. Mon-Thurs you should work on the Programming Assignment (PA) at least 4 hours total.

Please note:

- In a three-hour course, you should expect six hours of homework per week. How you manage your schedule is up to you, but do spend some time each day on this course. The weekly schedule will be as follows:

Monday: POGIL Activities in ISAT/CS 236

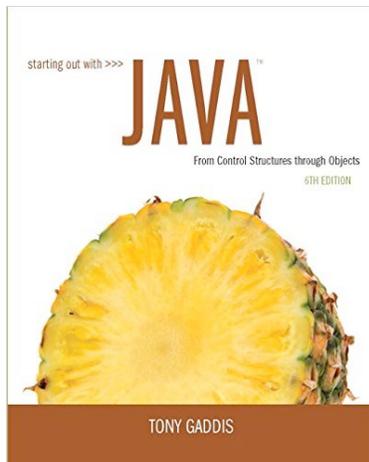
Reading Assignment, Video and Quiz available

Wednesday: 5:00 am Quiz due

Lab in-class, due at 11:00 pm

Friday: Lab or Pair Programming in class, due at 11:00 pm, PA's due every other week

- Programming assignments (PA) can take about eight hours to complete; that's why they are due every two weeks. Don't wait until the second week to get started. Ask any student who has taken this class what that's like. To encourage an early start on the programming assignments, I may have questions on the quiz about the definitions and requirements of the Programming Assignment.
- While I will answer Piazza questions over the weekend, you should realize I may not answer in the timeframe you need. If you choose to complete assignments at the last minute or after the deadline, especially after the first PA, which is relatively straightforward you have significantly decreased your chances of successful completion. I will make sure any emails sent over the weekend are answered on Monday at the latest.
- Undergraduate assistants are generally available in the labs from 5:00 PM to 11:00 PM on Monday through Thursday and 1:00 PM to 11:00 PM on Sunday. A detailed schedule will be available 2-3 weeks into the class. Do not rely on them to fix your code—you won't have TAs during exams. Do go to TAs and come to my office for clarification on concepts, ideally before you are working on the PA.



Required Textbook

The required textbook is Starting Out With Java from Control Structures through Objects, 6th Edition, by Tony Gaddis. You may use whatever version (paperback, eBook, or standard textbook) that will work best for you. If you have the funds you might consider a new copy or purchasing access to the video materials. Some students find these useful. I selected this book largely because it is and has been used frequently for this course and is also used for the next course in the sequence CS159. Getting familiar with the book this semester is likely to help in CS159.

You are certainly welcome to use additional resources, such as Think Java: How to Think Like a Computer Scientist by Allen Downey and Chris Mayfield (2016). This book is online at <http://thinkjava.org>. You may also get an older edition of the textbook, but ***I will not be responsible for explaining differences.*** Computer science textbooks change frequently so anything before edition 4 is too old to be useful. There may be topics covered in this class that are not covered in Dr. Mayfield's class, his textbook, or older versions of this textbook.

Online Interaction

Please bookmark the following websites:

- w3.cs.jmu.edu/weikleda/cs149/

The detailed schedule page on the course website will provide links to activities, labs, readings, videos, and assignments. While this is getting set up – assignments will be on Canvas.

- <https://canvas.jmu.edu/>

We will use Canvas primarily for submitting labs, posting solutions, and communicating grades. I intend to have the majority of materials available on the website, but Canvas will have all due dates as well.

- <https://piazza.com/>

If you have questions about course content or assignments, post them on Piazza rather than email me or TAs directly. This will help significantly in getting a timely answer as more people might answer. I get email automatically when a question is posted to Piazza.

- <https://webcat.cs.jmu.edu/>

Web-CAT is an automated submission system we will use for some of the assignments and labs.

- <https://www.jgrasp.org>

jGRASP is an independent development environment that you can use to develop your code and programming assignments. You may use a different development environment, but this is the one I intend to support in class.

If you need to schedule an appointment or have a personal inquiry, don't hesitate to email me directly. However, do not send me messages via Canvas—I will disable its notifications after the first week.

Methods of Evaluation

Participation

Class activities, labs, and reading quizzes will include a graded component. They will be due by 11:00 PM on the day they are assigned. You are encouraged to work with other students on these types of assignments during class time. I will drop a minimum of 3 of your lowest scores in this area to allow for unforeseen circumstances. Extra points may be awarded for insightful questions, answers, and comments made in class and online.

Assignments

There will be six programming assignments over the course of the semester. The source code you submit must be entirely your own work. When talking to other students or friends, never refer to code written for programming assignments, either directly or indirectly. If you receive help from an instructor or lab assistant, you must make note of it in the comments of the relevant source files. Programs will be graded on correctness, documentation, and overall code quality.

Late Work Policy

Programming assignments will be due on Fridays at 11:00 PM. Late submissions will be docked 25% per day for up to two days (Saturday and Sunday), after which they will no longer be accepted. Situations may arise that make it difficult for you to complete an assignment on time, such as illness, hardware failures, or travel problems. To accommodate these situations, each student has two late days that allow you to extend the deadline by 24 hours. You may apply both days to a single assignment or distribute them across multiple assignments. To use a late day, you must email the instructor immediately after you submit the assignment.

Academic Honesty

If you violate the University's Honor Code (<http://www.jmu.edu/honorcode/code.shtml>), you will receive a reduced or failing grade in the course, other penalties may be imposed, and the violation will be reported to the Honor Council. Automated tools may be used on any assignment, at any time, to detect inappropriate collaboration and to determine the originality of submissions.

Midterms/Final

We will have two midterms in class and a comprehensive exam during finals week. Each exam will be two hours: one for written problems, one for coding problems. If you must be absent during an exam for a legitimate reason, you must contact me at least one week beforehand to make special arrangements. Failure to make prior arrangements for a missed exam will result in a zero grade.

Grading Criteria

Your course grade will be based on:

- 25% Assignments
- 15% Participation
- 35% Midterms
- 25% Final Exam

Letter grades will be assigned on the scale A=90–100, B=80–89, C=70–79, D=60–69, F=0–59, with potential minor adjustments after considering the overall performance of the class and actual distribution of numeric scores. I will use “+” and “-” grades at my discretion. I do not assign WP or WF grades except in extreme circumstances.

Important Notes

Students who do not earn 60% of the points on the final exam will receive a letter grade no higher than D+ for the course. You must achieve a B– or better grade to continue on to CS 159.

University Policies

Adding/Dropping

You are responsible for enrolling in courses and verifying your schedule on MyMadison. The deadline for adding a semester course is Thursday, 09/15/2016 (signatures required after Tuesday, 09/06/2016). The last day to withdraw from a course with a W grade is Thursday, 10/27/2016.

Disability Services

If you have a documented disability and need accommodations in this course, please register with the Office of Disability Services (<http://www.jmu.edu/ods>, Student Success Center, Room 1202, 540-568-6705). They will provide you with an Access Plan Letter to verify your need for services and make recommendations for the course. I will be happy to discuss your access plan with you. I highly recommend that if you had accommodations in high school that you document that immediately. It will likely help you learn better and have a more successful college experience.

Excused Absences

Students who are unable to attend class due to JMU sponsored activities (such as sports, band, academic competition, field trips, etc) or personal religious observances may request reasonable accommodations. Please notify me during the first week of class regarding potential absences so that we can determine alternative methods for you to complete the required work. Since I will post all deadlines and work, I expect you to have access to all materials necessary without coming to see me when unavoidable absences occur. You are however encouraged to stop by and get whatever assistance and perspective might be beneficial.

University Closings

For severe weather and other unexpected circumstances, watch for announcements relating to make-up work. See <http://www.jmu.edu/JMUpolicy/1309.shtml> for JMU’s cancellation policy. Although the schedule may adapt to canceled classes, **assignment deadlines rarely change.**

Also, since I live in Crozet, an hour away. Many students think that I will not come in inclement weather. I often stay in Harrisonburg if snow or other weather may keep me from teaching or another faculty member will substitute for me. So, follow the university closing information!