CS 149: Introduction to Programming

James Madison University | Fall 2023 | Dr. Mayfield

Catalog description: Fundamental problem-solving techniques using a modern programming language. Topics include variables, input/output, decisions, loops, functions, arrays, and objects. Students learn about algorithm development, testing strategies, and software tools. *3 credits.*

Prerequisite: MATH 155 College Algebra or sufficient score on the Mathematics Placement Exam.

Class Times

- **Section 5:** M/W/F 12:40–1:30pm
- **Section 6:** M/W/F 1:50–2:40pm

Locations:

- EnGeo 2209 (Classroom)
- EnGeo 2204 (Computer lab)

Instructor Info

Dr. Chris Mayfield, Professor of Computer Science

Email: mayfiecs@jmu.edu | **Office Phone:** 540-568-3314
The best way to contact me is by email (not via Canvas).

Office Hours: Tu/Th 1:00–3:30pm in King Hall 208
Please see instructions for checking in when you arrive.

Course Objectives

By the end of CS 149, you should be able to:

- Explain fundamental programming concepts (e.g., variables, conditions, loops, classes, objects) using correct terminology.
- Describe basic elements of high-level programming languages (e.g., expressions, statements, functions, modules, libraries).
- Read and interpret software specifications and write source code from them.
- Use automated software tools and processes to test your programs thoroughly.
- Distinguish appropriate collaboration from cheating on assignments and exams.
- Evaluate your own work for compliance with requirements and style guidelines.
- Develop correct and efficient algorithms to solve problems using computation.

Teaching Methods

Spoiler alert! If you're hoping for a traditional lecture day after day, you signed up for the wrong course. Research has shown that active learning methods are more effective than passive methods like taking notes. This course uses a mix of Process Oriented Guided Inquiry Learning, Peer Instruction, and Interactive Lecture. Here is what a typical week looks like:

- **Monday:** Interactive lecture, additional examples and live demos, practice problems, hints on the homework.
- **Tuesday:** Finish the reading / homework due tonight, and ask questions about what you don't fully understand.
- **Wednesday:** Discuss the homework solutions, take this week's quiz, mini-lecture introducing the next chapter.
- **Thursday:** Start reading the next chapter / working on the next homework, figure out what you need to learn.
- **Friday:** Group activity or hands-on lab that introduces the key concepts from the next chapter and homework.

> **Weekend Hours**
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> I generally do not respond to emails between Friday at 5:00pm and Monday at 8:00am. TAs are available on Sunday to answer questions and help you learn. You are welcome to email me over the weekend, but I will mostly likely respond on Monday.

Laptop Classroom

You will need a laptop on some class days. Any laptop will do, including a Chromebook. If you don't have a laptop, the CS department can loan you one for the semester. Our classroom also has a set of 12 laptops if you don't bring your own to class. The only software you will need to install is Thonny (https://thonny.org/).

Technologies Used

All instructional materials including handouts, slides, videos, and sample code will be on the course website (https://w3.cs.jmu.edu/mayfiecs/cs149/).

JMU Department of Computer Science

I will use Canvas (https://canvas.jmu.edu/) for posting announcements, sharing non-public files, and communicating grades.

You will use Gradescope (https://gradescope.com/) to submit assignments and exams. Gradescope provides automated feedback to help you improve your work. In the end, I always review and grade your work manually.

We will use Piazza (https://piazza.com/) for homework Q&A and asynchronous discussions. All instructors, TAs, and 300+ students enrolled in CS 149 will be in the same Piazza course.

Required Textbook

Miller, Bailey et al. (Mar 2023). *Programming in Python 3*. https://www.zybooks.com/catalog/programming-in-python-3/

"An online introduction to both the principles and the practice of programming, in the increasingly popular Python language. Uses extensive interactivity (animations, learning questions, tools), and challenge programming exercises (homework). A web-based programming environment gives immediate access to the Python interpreter; no downloads required. Replaces traditional textbooks."

Getting the Book

We have customized this zyBook for CS 149. Please do the following to purchase:

- Create an account on https://learn.zybooks.com using your dukes email.
- Enter the zyBook code: `JMUCS149Fall2023`.
- Select `Mayfield` as your course section.
- Your subscription will cost $64 and last until Dec 30, 2023.

Culture of Learning

Please help us maintain a collaborative environment that encourages questions, provides opportunities for significant learning, and actively involves everyone in discussions.

Professional Conduct

The ACM Code of Ethics (https://www.acm.org/code-of-ethics) forbids discrimination and harassment of all types. If you believe someone is violating these principles (e.g., by making inappropriate or demeaning remarks), it is your responsibility to take action by informing me or, if you feel comfortable doing so, addressing the individual directly. I will do my best to preserve your confidentiality when addressing the issue.

Inclusive Excellence

Learning environments should be built on mutual respect and support a diversity of thoughts, perspectives, experiences, and identities. Please advise me regarding any concerns or personal circumstances (including your name's proper pronunciation, any name or pronouns not reflected on MyMadison, or significant extracurricular commitments) that would be relevant to your full participation in this course.

Academic Honesty

Don't Cheat

Students who violate the Honor Code (https://www.jmu.edu/honorcode/code.shtml) will receive a reduced or failing grade *in the course*. Other penalties may be imposed, and all violations will be reported to the Honor Council. Automated tools may be used on any assignment, at any time, to detect inappropriate collaboration and the originality of submissions.

Generative AI

You are encouraged to use AI technology in ways that support your learning. However, do not ask ChatGPT or similar tools to do your homework for you. The use of AI is strictly prohibited during quizzes and exams, so make sure you can program without AI. See the *Generative AI in Computing Education* Student Guide for examples of permitted use.

Methods of Evaluation

zyBook Reading

Each week has 1–2 hours of assigned reading. The textbook includes many interactive activities. You are required to complete the participation (orange) activities. The challenge (blue) activities are useful but completely optional.

In-Class Work

You are encouraged to work with other students both during and after class. In-class activities and labs have participation points, because your attendance impacts others. If you are absent occasionally, you will have the opportunity to make up missed work.

Homework

Written and/or programming exercises will be assigned each week. You are welcome to discuss assignments with other students, but the solutions and source code you submit must be entirely your own work.

> **Be Careful!**
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> Being able to understand someone else's code is very different from being able to write code on your own. If you become over-reliant on outside assistance, you won't develop the skills you need to succeed on quizzes and exams.

> **Late Work Policy**
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> Deadlines exist so that we can discuss solutions in class. Therefore, late work will not be accepted without special permission. I am willing to work with you if your circumstances suddenly change. Please don't wait until the night before to get started!

Quizzes

In place of midterm exams, we will have weekly in-class quizzes. Each quiz will be about 20 minutes and focus on two chapters of the textbook. As shown in the table, you will be quizzed on each pair of chapters twice. The first quiz will be given the day after the homework is due. A similar quiz on the same material will be given one week later. The goal is to improve your score on the second quiz. Your score for the chapters will be whichever quiz score is higher.

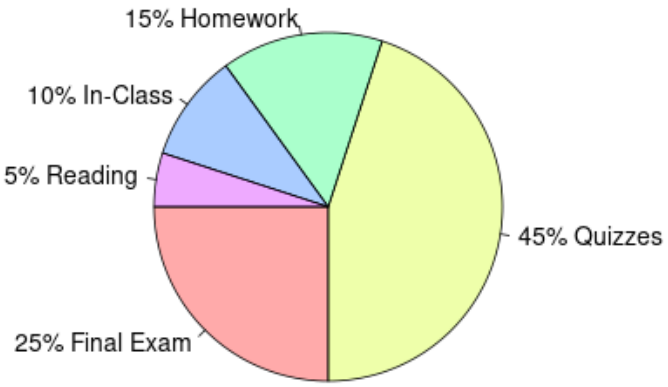
Quiz	Chapters	First	Second
1	1–2	Sep 06	Sep 13
2	3–4	Sep 20	Sep 27
3	5–6	Oct 04	Oct 11
4	7–8	Oct 25	Nov 01
5	9–10	Nov 08	Nov 15
6	11–12	Nov 29	Dec 06

Final Exam

This course is inherently cumulative; each week builds on the prior weeks. We will have a two-hour written and programming exam during finals. The content and format of the final exam will be similar to the weekly quizzes.

Grading Criteria

Your grade in CS 149 will be based on:



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 unusual circumstances.

Students who score below 60% on the final exam will receive a grade no higher than C– in the course. You must earn a B– or higher grade in CS 149 to enroll in CS 159.

University Requirements

Attendance Policy

You are expected to participate in every class. I understand that things come up, and you might need to be absent occasionally. That's why I provide make-up opportunities for in-class work. If you are not feeling well or suspect you might be ill, please stay at home. Note the following when you are absent:

- **Monday**
  You have until this Friday to complete the in-class work. You don't need to email me unless you were absent last Friday.
- **Wednesday**
  Please contact me as soon as possible. I will allow you to make up the quiz before Friday's class, unless you have a chronic pattern of absences.
- **Friday**
  You have until Wednesday to complete the in-class work. You don't need to email me unless you were absent last time.

Adding/Dropping

You are responsible for enrolling in courses and verifying your schedule on MyMadison. The last day to add a semester course is Monday, 09/11/2023 (permission required after Friday, 09/01/2023). The last day to withdraw from a course with a W grade is Wednesday, 10/25/2023.

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). ODS will provide you with an Access Plan Letter to verify your need for services and make recommendations for the course.

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 you and I can plan ahead.

University Closings

Given severe weather and other unexpected circumstances, be sure to watch for announcements relating to make-up dates. See http://www.jmu.edu/JMUpolicy/1309.shtml for JMU's cancellation policy. Although the schedule may adapt to canceled classes, assignment deadlines generally do not change.

Your Well-Being

As a university student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily life. If you or someone you know is experiencing mental health challenges at James Madison University, please connect with the Counseling Center located within the Student Success Center on the 3rd floor. You can learn more about available services by visiting https://www.jmu.edu/counselingctr or calling 540-568-6552. These services are free and confidential. Other available support resources to consider include, but are not limited to, the Office of the Dean of Students, the Health Center, and Learning Strategies Instruction.