

CS 180E: Python Programming

James Madison University, May Session 2019, 3 Credits

Home Page:

<http://w3.cs.jmu.edu/mayfiecs/cs180>

Class Times:

M/Tu/Th/F 9:30 AM – 11:30 AM

Location:

ISAT/CS 246 (classroom + lab)

Prerequisite:

CS 149 or ISAT 252 or CIS 221



Your Instructor



Dr. Chris Mayfield
mayfiecs@jmu.edu

Office: ISAT/CS 208
Phone: 540-568-3314

Office Hours: TBD
Email for appointment

Goals and Objectives

Catalog description: *An introduction to Python for students with prior programming experience. Topics include most of CS 149 and portions of CS 159, including decisions, loops, functions, lists, classes, exceptions, files, and recursion. Students learn about algorithm development, testing strategies, and software tools.*

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

- Explain fundamental programming concepts (e.g, variables, methods, decisions, loops, arrays, objects) using appropriate terminology.
- Describe basic elements of high-level programming languages, including expressions, statements, functions, modules, and 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.

Methods of Instruction

This 4-week intensive course will require a commitment of about 25 hours per week. We will work through the Python 3 “zyBook” at a pace of one chapter per day. Here is what a typical day in class will look like:

09:30 Homework Q&A

09:40 POGIL Activity (work in teams of 3–4 students to learn concepts, see pogil.org)

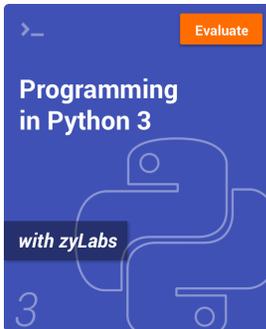
10:25 Break

10:30 Lecture/Demo

10:40 Hands-on Lab (work with a partner to complete several programming exercises)

11:25 Wrap-up

Required Textbook



Miller, Bailey (2019). *Programming in Python 3*. Los Gatos, CA.
<https://www.zybooks.com/catalog/programming-in-python-3/>

“This zyBook teaches programming in a unique interactive way: Animations make challenging concepts clear, learning questions engage students, tools develop intuition and skill, web-based programming windows allow practice, and web-based challenge activities allow demonstration of skill. This zyBook includes coverage of basic programming constructs (branches, loops, functions) to advanced topics such as inheritance, exceptions, and plotting.”

Tentative Schedule

For each chapter, we will have two hours of classwork plus several hours of homework. All work must be completed on the assigned day. There will be a take-home midterm exam at the end of the second week, and a comprehensive final exam on the last day of class.

	Mon	Tue	Thu	Fri
Week 1: The Basics	Chapter 1 Introduction	Chapter 2 Arithmetic	Chapter 3 Types	Chapter 4 Functions
Week 2: Structures	Chapter 5 Decisions	Chapter 6 Loops	Chapter 7 Sequences	Chapter 8 Containers
Week 3: Program Design	Memorial Day	Chapter 9 Modules	Chapter 10 Files	Chapter 11 Classes
Week 4: Special Topics	Chapter 12 Inheritance	Chapter 13 Recursion	Chapter 14 Plotting	Final Exam

Additional Resources

- <http://thonny.org/> – Python IDE for beginners
- <http://pythontutor.com/> – Visualize code execution
- <https://docs.python.org/3/tutorial/> – Official tutorial

Methods of Evaluation

Participation

In-class activities and labs will include a graded component. You will be required to work with other students on these types of assignments.

zyBook Reading

The textbook includes hundreds of participation activities: questions, animations, tools, etc. You will complete many of these activities while you read each chapter.

Programming

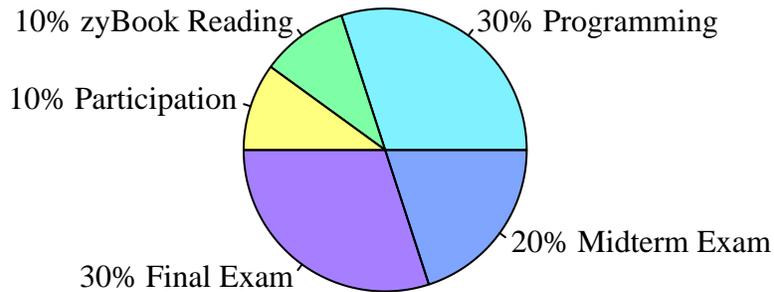
Each day you will write several short programs using zyLabs, an online programming environment that comes with the textbook. These programs are automatically graded. The source code you submit must be entirely your own work.

Midterms/Final

We will have two midterms (take-home) and a comprehensive exam (in-class). You must work individually to complete these exams. Failure to make prior arrangements for a missed exam will result in a score of zero.

Grading Criteria

Your course grade 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 extreme circumstances.

Important Notes

You are expected to learn the material, not just complete the homework. Students who do not earn 60% of the points on the final exam will receive a letter grade no higher than C for the course.

University Policies

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.

Adding/Dropping

You are responsible for enrolling in courses and verifying your schedule on MyMadison. The deadline for adding this course is Friday, 05/17/2019 (permission required after Wednesday, 05/15/2019). The last day to withdraw from this course with a W grade is Friday, 05/24/2019.

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.

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.

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 generally do not change.