

**Course: M 210 Introduction to Mathematical Software / Spring 2021 / T: 3:00 – 5:30 p.m.
Room McGill 210**

Instructor: Professor [Kelly McKinnie](#)

Office hours: M: 9:00 – 11:00 AM and Friday 1-2 by zoom: [929 3006 5012 passcode 031835](#)

Textbook: No textbook. The class will use the platform [cocalc.com](#) and the class Moodle shell. Handouts as well as online resources and manuals will be presented to the students throughout the semester. We will make use of the python programming language, Jupyter notebooks, sagemath LaTeX and R, all accessed through cocalc.

Course Description: 3 credit hours. Prereq., one of M 162, M 171, or M 181, or consent of instr. Software packages useful for doing and writing mathematics. Introduction to a computer algebra system (such as Maple or Mathematica), a numerical package (such as MATLAB or R), and elementary programming. Writing and communicating mathematics using the mathematical typesetting system LaTeX.

Intended Audience: Mathematics Majors.

Learning Outcomes: Upon completion of this course, a student will be able to:

1. Use a computer algebra system or a numerical package to solve mathematical problems;
2. Display mathematical objects graphically;
3. Model repetitive processes and conditional situations;
4. Model multidimensional objects using vectors, matrices, or related structures;
5. Use mathematical experimentation to make mathematical conjectures, and to find evidence for or against mathematical conjectures;
6. Independently, find solutions to modeling problems with the aid of software documentation;
7. Use LaTeX; demonstrate the ability to typeset mathematical documents.

Course Format: The format is a mixture of lectures, videos, in class/live stream problem solving activities and group projects.

Assessment: Weekly homework assignments will be given during the semester (60% of the final grade) as well as one midterm exam (10% of the final grade). The final project (25% of the final grade) will be an oral presentation of your portfolio of work developed throughout the semester. Some material will only be given in class, so the attendance and participation are very important for understanding of the course material. Thus, the course grade will also be based on attendance and participation (5% of the final grade).

Grading intervals:

A: [85%, 100%]; B: [70%, 85%]; C: [55%, 70%]; D: [40%, 55%]; F: [0%, 40%).

Add / Drop policies: Important dates for registration add/drop can be found on the [registrar's website](#). **The final deadline for all changes is April 23, 2021.**

Academic Integrity: All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. You can find it in the “A to Z Index” on the UM home page.

Disability modifications: The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you have a disability that adversely affects your academic performance, and you have not already registered with Disability Services, please contact Disability Services at 406-243-2243. I will work with you and Disability Services to provide an appropriate accommodation.

Important Dates: will be listed on the class Moodle page. Please check this out on the first day of the course!

The Final Project Throughout the semester you will build your portfolio. During final exam week (April 26 – 30) you will schedule an oral presentation on your portfolio as your final project. The contents of your portfolio will strive to show mastery of several course objectives which we will build up as the semester progresses. The first objective is

I understand multiple ways to display mathematics using software packages.

Look for the other course objectives on moodle/cocalc as the semester progresses.