

Welcome to Math 475 Mathematical Modeling – Fall 2019

2:00 - 2:50 M-Th in SAMU 138

Instructor: Dr. Jean Marie Linhart
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Webpages: (course) <http://canvas.cwu.edu>
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Office Hours: MTThF 11:00-11:50 am
and by appointment

The best ways to contact me are email, Canvas message, and office hours. If there's something I need to remember for later PLEASE put it in email or Canvas message! If I don't reply within 24 hours over a business day, please contact me again. While I strive to be responsive and prompt, sometimes things get put off for later and unintentionally forgotten.

This syllabus is subject to modification. Students will be notified of changes in class and on Canvas.

Text: No textbook. Come to class.

Computer: You will want to have the use of a reliable computer for the duration of this course, with your course files backed up daily to Google Drive, Dropbox or another reliable repository. You will likely want to have your computer with you in class daily. Install

- Anaconda for Python ; see <http://www.anaconda.com/download>.
- \LaTeX ; Most students use an online \LaTeX service, such as <https://www.overleaf.com/>. You can also install \LaTeX on your personal computer see <https://www.latex-project.org/get/>.
- Dropbox, Google Drive, or a similar product to back up your files. Be sure you know how to make sure that your work is in the right spot on the file system so that one of these services is backup up your work daily (if not hourly).

Course Goals: This course is an introduction to mathematical modeling using examples from physical, chemical, biological, economic, and social systems. The use of software, critical thinking, and technical communication will be emphasized. In short, mathematical modeling is one course where we connect your mathematical studies to the *real world*.

Learning outcomes:

1. Students will select mathematical models to best describe the process of mathematical modeling.
2. Students will judge what to include and what to leave out of a mathematical model, and defend their choices based on results and constraints.
3. Students will appraise the requirements of a problem to make modeling decisions.
4. Students will evaluate which mathematical model performs best in a modeling situation.
5. Students will predict modeling results.
6. Students will assess mathematical models by obtaining numerical results.

Grades: Your final grade is based on

Writing	45%	Writing products, including formative work and drafts. One of these is the Final Portfolio for the class, due during finals week.
Computation	30%	Computer code, possibly also hand calculations or descriptions of computational work.
Exams	15%	Two in-class exams expected.
Presentation(s)	10%	Presentation(s) on modeling projects or aspects of modeling

Grades will be calculated using the following scale:

93-100	A	80-82.9	B-	67-69.9	D+
90-92.9	A-	77-79.9	C+	63-66.9	D
87-89.9	B+	73-76.9	C	60-62.9	D-
83-86.9	B	70-72.9	C-	Below 60	F

You will be given opportunities to get feedback on, rewrite and revise most of the writing assignments. Take advantage of this.

Since the final portfolio is due during finals week, your opportunities to rewrite, revise and get feedback are **before it is due**.

The three most valuable marketable skills you will hone in this course are the ability to communicate clearly in writing, knowing how to program a computer to solve a problem for you, and the ability to communicate clearly in a presentation.

You will have opportunities to practice and polish your presentations. Take advantage of this.

Final Exam Period: Attendance at the final exam period is mandatory. There will be a 10% reduction on the course grade in addition to a 0 on any work missed if this period is missed without a documented excused absence or emergency.

Any final presentations that cannot be done during the class poster session, or, as appropriate, redos final presentations will take place during this time. All class members are expected to attend to support their colleagues, and to participate in a wrap-up discussion about the class. Help is available during this time with the final portfolios.

Attendance: There is no book, and many learning experiences for the class involve actively working with others during class. I expect you to be in class daily.

Excused absences will not lower your overall grade in this class and are determined on a case-by-case basis. Excused absences are those that are both valid and verifiable, e.g. illness, bereavement, and school-related activities. Documentation is required. Excused absences do not include travel for holiday breaks, work, or non-emergency travel delays.

In compliance with RCW 28B.137.010, Central Washington University makes every effort to deal reasonably and fairly with students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students must present written notice to their instructor within the first two weeks of class listing the specific dates on which accommodations are required. Contact the Dean of Student Success at (509) 963-1515 for further information or questions.

Late work: A penalty of 5% will be assessed for the first 24 hours an assignment is late, and 10% for each 24 hour period thereafter, including weekends. Professionalism is expected. As a professional you may occasionally ask, 24 hours before an assignment is due, for an extension on a deadline. Extensions are generally for 24 hours, but may be longer with my advance permission. These requests will generally be granted if the privilege is used **rarely** and if there are at least 24 hours between the request and the due date for the assignment. You are each given one “free pass” to hand in one assignment, except for a presentation, 24 hours late no questions asked.

If you have a documented excuse of an accident or emergency, contact me by email (preferred) or phone message **as soon as possible**, and certainly within within 2 business days of the event, and bring documentation of the excuse, and I will accept your late work at an agreed upon reasonable time given the circumstances.

Getting Help: We have all needed help with something. Working with students on math is one of the best parts of my job. If you find yourself feeling uncertain, wanting a deeper understanding, wanting to get better marks, or struggling to learn and succeed, please ask questions in class, post questions on Canvas, and/or come see me in office hours. Please give me a chance to help.

In particular, computer issues and errors can drive a student crazy in this class. Start your assignments well ahead of time so that when something isn't working, you can take 30 minutes to try to solve it yourself, and then have time to ask me for help if you are not successful. If you are working on something right before it is due, you may run into small issues that take you hours at best to resolve on your own. I can often get you back on track in 10 minutes. I am always willing to troubleshoot computer problems if you send me your \LaTeX or Python code via email.

Plagiarism: This is a writing course. Plagiarism is a major issue that occasionally comes up. You cannot use others work and present it as your own. This includes copying directly or paraphrasing from any source without a citation and quote marks as appropriate. Do not look at or listen to original source material as you are trying to write things in your own words unless you are planning to cite it. If you ever feel uncertain about how to use a source or what to do, **please ask**. Plagiarism will at minimum result in reduced credit on the assignment – possibly no credit, and possibly a failing grade in the class. I do not want this to happen to you; ask me questions so I can help you to do things right. I will not get mad and you will not get into trouble if you ask me how to handle a situation **BEFORE** you hand your work in.

Plagiarism of computer code is also not allowed. If you create computer code with another person, both people should get a copy afterwards, and that segment of code should be commented for joint authorship. You should never give someone else your computer code if they did not participate in the effort to create it. Never take computer code from another student. Ask me, your instructor, before you use code available on the web, and if you do, you must **always** cite your source (provide a link and a note). If you use another person's code as a resource while writing your own, you **must** cite your source.

Consult university policies (CWUP 5-90-040(22), CWUR 2-90-040(22), and WAC 106-125-020) for student conduct, cheating, plagiarism, and other academic expectations. CWU's policies and recommendations for academic misconduct will be followed, leading to disciplinary action up to and including failing the course.

Students with Disabilities:

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations: Hogue Hall 126, (509) 963-2214, DS@cwu.edu

Diversity As a member of a peer learning community, a high degree of professionalism is necessary. CWU expects every member of the university community to contribute to an inclusive and respectful classroom culture.

Important Dates

Sept 25	classes begin	Nov 27-29	Thanksgiving Holiday (no classes)
Oct 1	change of schedule period ends	Dec 4	poster session (presentations) 4 pm SAMU 252
Oct 31	in class exam	Dec 5	in class exam
Nov 8	uncontested withdrawal period deadline	Dec 10	12 - 2 pm Final Exam
Nov 11	Veteran's Day (no class)	Dec 11	11:59 pm final portfolios due