

**UNIVERSITY OF WYOMING****MATH 4300 01****Introduction to Mathematical Modeling (3 credit hours)****Arts & Sciences Bldg 210****Fall 2023****TR 1:20 pm - 2:35 pm****Instructor contact information:**Dr. Stefan Heinz, Ross Hall 214, 766-4203, [heinz@uwyo.edu](mailto:heinz@uwyo.edu)**Office hours:**

TR 11:00 am – 12:20 pm

**Course prerequisites, co-requisites, enrollment restrictions:**

Grade of C or better in MATH 2250 or 2310

**Course Description:**

Mathematical techniques are used to construct, analyze and interpret various deterministic and stochastic mathematical models which arise from problems in the physical, engineering, biological, and social sciences.

**Student Learning Outcomes:**

Understanding of how real-world problems can be reflected in a mathematical model and why this is beneficial

**Recommended texts, readings, and special tools or materials:**

Heinz, S. 2011 Mathematical Modeling, Springer-Verlag, Heidelberg, Dordrecht, London, New York.

Tentative Schedule:

Chapter	Topics
1	Deterministic Analysis of Observations
2	Stochastic Analysis of Observations
3	Deterministic States
5	Deterministic Changes
4	Stochastic States

**General requirements and expectations for the course:**

Homework is the most vital part of this course. Mathematics, more than most subjects, is one which you learn not by listening and absorbing, but by trying out yourself. The learning of mathematics is also more sequential than that of other subjects ... so all the more need to be regular in doing problems yourself! **Homework assignments will be assigned approximately once per week via WyoCourses. Usually, I'll inform you about the posting of homework by email. You have then one week to do the homework, which needs to be submitted via WyoCourses.** It is fine for you to discuss the homework with other students. However, please do not copy anyone else's work directly. Copying may adversely affect your grade; but more importantly, you won't be adequately preparing yourself for the tests in this way. Homework submitted later than the due date will not contribute to your grade unless you have any agreement with me.

**Required examinations, assignments, activities, and projects:**

There will be two term tests and one final exam in class. Term tests will cover a specified unit of material only, but the final exam will be comprehensive. Later during the semester we will fix dates for the term tests. Make-up tests, for those who miss tests, will only be granted in cases of verifiable illness or the most extreme circumstances (at my discretion). Please contact me in advance of such a situation if possible, or leave a message with the Math Department (766-4221). Even in legitimate cases, the make-up test will be harder than the original test.

**Final Examination or Final Project Date:**

TBA

**Grading Scale and Grading Policies:**

Grading Scheme

40%	Homework
15%	Term Test #1
15%	Term Test #2
30%	Final Exam

Grade Requirements

A	> 90%
B	> 80%
C	> 70%
D	> 60%
F	< 60%

**Attendance and Absence policies:**

I strongly recommend class participation and attendance and consider this activity essential in determining borderline grades. University policies on excused absences as outlined in [UW Regulation 2-108 \(Student Attendance Policy\)](#).

**Classroom Behavior Policy:**

At all times, treat your presence in the classroom and your enrollment in this course as you would a job. Act professionally, arrive on time, pay attention, complete your work in a timely and professional manner, and treat all deadlines seriously. You will be respectful towards you classmates and instructor. Spirited debate and disagreement are to be expected in any classroom and all views will be heard fully, but at all times we will behave civilly and with respect towards one another. Personal attacks, offensive language, name-calling, and dismissive gestures are not warranted in a learning atmosphere. As the instructor, I have the right to dismiss you from the classroom and other areas where disruptive behavior occurs. Electronic devices such as mobile phones should be set to silent.

**Classroom Statement on Diversity:**

The University of Wyoming values an educational environment that is diverse, equitable, and inclusive. The diversity that students and faculty bring to class, including age, country of origin, culture, disability, economic class, ethnicity, gender identity, immigration status, linguistic, political affiliation, race, religion, sexual orientation, veteran status, worldview, and other social and cultural diversity is valued, respected, and considered a resource for learning.

**Disability Support:**

The University of Wyoming is committed to providing equitable access to learning opportunities for all students. If you have a disability, including but not limited to physical, learning, sensory or psychological disabilities, and would like to request accommodations in this course due to your disability, please register with and provide documentation of your disability as soon as possible to Disability Support Services (DSS), Room 128 Knight Hall. You may also contact DSS at (307) 766-3073 or [udss@uwyo.edu](mailto:udss@uwyo.edu). It is in the student's best interest to request accommodations within the first week of classes, understanding that accommodations are not retroactive. Visit the DSS website for more information at: [www.uwyo.edu/udss](http://www.uwyo.edu/udss).

**Academic Dishonesty Policies:**

Academic dishonesty will not be tolerated in this class. Cases of academic dishonesty will be treated in accordance with UW Regulation 2-114. The penalties for academic dishonesty can include, at my discretion, an "F" on an exam, an "F" on the class component exercise, and/or an "F" in the entire course. Academic dishonesty means anything that represents someone else's ideas as your own without attribution. It is intellectual theft - stealing - and includes (but is not limited to) unapproved assistance on examinations, plagiarism (use of any amount of another person's writings, blog posts, publications, and other materials without attributing that material to that person with citations), or fabrication of referenced information. Facilitation of another person's academic dishonesty is also considered academic dishonesty and will be treated identically.

**Duty to Report:**

UW faculty are committed to supporting students and upholding the University's non-discrimination policy. Under Title IX, discrimination based upon sex and gender is prohibited. If you experience an incident of sex- or gender-based discrimination, we encourage you to report it. While you may talk to a faculty member, understand that as a "Responsible Employee" of the University, the faculty member **MUST** report information you share about the incident to the university's Title IX Coordinator (you may choose whether you or anyone involved is identified by name). If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are people who can meet with you. Faculty can help direct you or you may find info about UW policy and resources at <http://www.uwyo.edu/reportit>. You do not have to go through the experience alone. Assistance and resources are available, and you are not required to make a formal complaint or participate in an investigation to access them.

**Substantive changes to syllabus:**

All deadlines, requirements, and course structure is subject to change if deemed necessary by the instructor. Students will be notified verbally in class, on our WyoCourses page announcement, and via email of these changes."

**Student Resources:***DISABILITY SUPPORT SERVICES:*

[udss@uwyo.edu](mailto:udss@uwyo.edu), 766-3073, 128 Knight Hall, [www.uwyo.edu/udss](http://www.uwyo.edu/udss)

*COUNSELING CENTER:*

[uccstaff@uwyo.edu](mailto:uccstaff@uwyo.edu), 766-2187, 766-8989 (After hours), 341 Knight Hall, [www.uwyo.edu/ucc](http://www.uwyo.edu/ucc)

*ACADEMIC AFFAIRS:*

766-4286, 312 Old Main, [www.uwyo.edu/acadaffairs](http://www.uwyo.edu/acadaffairs)

*DEAN OF STUDENTS OFFICE:*

[dos@uwyo.edu](mailto:dos@uwyo.edu), 766-3296, 128 Knight Hall, [www.uwyo.edu/dos](http://www.uwyo.edu/dos)

*UW POLICE DEPARTMENT:*

[uwpd@uwyo.edu](mailto:uwpd@uwyo.edu), 766-5179, 1426 E Flint St, [www.uwyo.edu/uwpd](http://www.uwyo.edu/uwpd)

*STUDENT CODE OF CONDUCT WEBSITE:*

[www.uwyo.edu/dos/conduct](http://www.uwyo.edu/dos/conduct)