

**UNIVERSITY OF WYOMING****MATH 4300 01****Introduction to Mathematical Modeling (3 credit hours)****Fall 2020, Online Class****Instructor contact information:**

Dr. Stefan Heinz, Ross Hall 214, 766-4203, [heinz@uwyo.edu](mailto:heinz@uwyo.edu)

**Video posting:**

Videos will be posted on Tuesdays and Thursdays before 10 am. The videos cover the teaching of about 2.5 hours per week. The video duration will be clearly less than 2.5 hours.

**Office hours:**

TR: 3:30 pm – 5:00 pm (subject to modifications). I will be available at this time. If you would like to talk to me during this time, I ask you to send me a brief notification by email so that I will be online.

**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                      |

**Comments on homework and video materials:**

Usually, I will prepare PDF files that follow the textbook. The videos will present my explanations of textbook materials. I will post both PDF files and videos.

Homework assignments will take place via WyoCourses. Written responses need to be submitted via the WyoCourses system. Usually, you will have one week to do the homework. Please contact me if there is a reason so that you cannot respond in time.

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

There will be two term tests and one final exam. Conditions for taking these tests will be specified later during the semester. 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% |

**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@uwoyo.edu](mailto:udss@uwoyo.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)

**COVID-19 Policies** – during this pandemic, you must abide by all UW policies and public health rules put forward by the City of Laramie (or by Natrona County if at UW-Casper), the University of Wyoming and the State of Wyoming to promote the health and well-being of fellow students and your own personal self-care. The current policy is provided for review at:

[www.uwyo.edu/alerts/campus-return/index.html](http://www.uwyo.edu/alerts/campus-return/index.html)

As with other disruptive behaviors, we have the right to dismiss you from the classroom (Zoom and physical), or other class activities if you fail to abide by these COVID-19 policies. These behaviors will be referred to the Dean of Students Office using the UWYO Cares Reporting Form for Student Code of Conduct processes

([cm.maxient.com/reportingform.php?UnivofWyoming&layout\\_id=5](http://cm.maxient.com/reportingform.php?UnivofWyoming&layout_id=5)).

I will alert you to any possible course format changes in response to UW decisions about community safety during the semester.

**Coronavirus Pandemic Addendum to Attendance Policy:** During the fall of 2020 and for the duration of the coronavirus pandemic, the attendance policy applies as noted below:

- **Self-Quarantine and Isolation:** Any student notified that they have tested positive for covid-19 or that they have been exposed to someone who has tested positive for covid-19 may need to isolate for up to two weeks at a time ([www.uwyo.edu/alerts/campus-return/index.html](http://www.uwyo.edu/alerts/campus-return/index.html)) Students will not be penalized for having to self-quarantine for exposure to an known positive. Students who test positive will be told to isolate and should continue to complete course work online for the duration of their isolation as they are able.
- **Illness:** Under no circumstances are students to attend in-person classes if they are experiencing any symptoms of covid-19. Illnesses are covered under the Authorized Absence program managed within the Dean of Students Office ([www.uwyo.edu/dos](http://www.uwyo.edu/dos))

### **Online Absences**

In the event that the course moves online at any point in the semester, an official student absence for the online version of this course is when a student meets the following criteria:

- The student does not engage with the week's course material and/or does not turn in the week's assignment on time.
- The student or a dedicated representative of the student fails to communicate the reason for not engaging with the course material and/or not turning in the week's assignment on time within the week of the absence.
- The dedicated student representative is the person tasked by the student for reaching out on their behalf when they are not able - e.g. parents, other family member, significant other, etc. A faculty member can receive information from the student's dedicated representative, but would need a FERPA release in place to discuss anything further. The Dean of Students will assist in these situations.