

Fsem 1111 – First Year Seminar: An Introduction to Mathematical Modeling

Lecture Time: 10:00am – 11:50am (MW) Location: Boettcher West 254

Partially based on Textbooks: Lucas, Discrete and System Models Vol 3 & Gould, Mathematics in Games, Sports, and Gambling – The Games People Play

Instructor: Mei Yin mei.yin@du.edu

Office and Office Hours: Zoom, 10:30am – 12:00pm (TR), or by appointment

Course Description

The purpose of this seminar is to make available for students samples of important and realistic applications of mathematics. The goal is to provide illustrations of how mathematics is employed to solve relevant contemporary problems. No matter how simple a mathematical model is, it involves making choices and calls for creativity. The class will not assume much background in mathematics except high school mathematics.

Student Learning Outcomes

Upon successful completion of this course, a student will develop the following skills:

1. Learning How to Learn: Practice newly acquired skills in an active learning environment where writing, quantitative reasoning, critical thinking, presentation and argument, and/or information literacy will shape the goals and activities of the seminar.
2. Foundational Knowledge: Identify the key elements for building appropriate mathematical models.
3. Application: Engage in critical inquiry in the examination of concepts, texts, or artifacts, and effectively communicate the results of such inquiry.
4. Integration: Relate mathematical procedures to quantitative reasoning that goes on in all other courses, including the humanities. Compare and organize themes for successful student interaction.

5. Human Dimensions: Discover what it means to be an active member of an intellectual community by meeting rigorous academic expectations through critical reading, discussion, research, and/or writing. Find ways to examine the differences and commonalities of peoples far apart geographically. Identify the tools that would allow students to share and exchange experiences and perceptions of their different cultures.
6. Caring: Value the importance of precise language in this field of work, as part of professionalism.

Grading

Your final grade for the course will be determined based on a numerical weighted average calculated as follows: **Attendance/Participation 20% Homework/Discussion Questions 40% Term Paper/Presentation 40%**. This average percentage will then be converted into a final letter grade based partially on how other students perform this quarter, and partially on typical percentage grades from previous quarters of the course.

Attendance

Students are expected to attend and actively participate in every scheduled class.

Homework

Homework and/or discussion questions will be assigned every week. You may work on the assignments either on your own or in a group consisting of no more than four people. **The due date is every Monday at the beginning of the class.** Assignments must be turned in promptly to receive credit. For submitted problems, students are expected to show work and justify their answers. Please write your name on the first page. For students who are working in a group, only one assignment should be turned in, with the names of the group members written on the first page. **The eight highest homework scores will contribute to 40% of your final grade.**

Term Paper

Students are expected to form two, three, or four-member teams and write a term paper on a mathematical modeling project that tackles a real life situation. Each team will give a presentation of their project during the **last week** of the quarter and there will be a short Q&A session following each team presentation.

Inclusive Learning Environment

In this class, we will work together to develop a learning community that is inclusive and respectful. Our diversity may be reflected by differences in race, culture, age, religion, sexual orientation, socioeconomic background, and myriad other social identities and life experiences. The goal of inclusiveness, in a diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs, so that conversations and interactions that could potentially be divisive turn instead into opportunities for intellectual and personal enrichment.

A dedication to inclusiveness requires respecting what others say, their right to say it, and the thoughtful consideration of others' communication. Both speaking up and listening are valuable tools for furthering thoughtful, enlightening dialogue. Respecting one another's individual differences is critical in transforming a collection of diverse individuals into an inclusive, collaborative and excellent learning community. Our core commitment shapes our core expectation for behavior inside and outside of the classroom.

Help

Additional handouts will be distributed throughout the quarter.

Students are also encouraged to ask for individualized help from the instructor at any time.

Students with Disabilities

If you qualify for academic accommodations because of a disability or medical issue, please submit a faculty letter to me from AccessibleDU: Student Disability Services (SDS) in a timely manner so that your needs may be addressed. SDS determines accommodations based on documented disabilities/medical issues. SDS is located in Suite 22 on the lower level of Driscoll South, 303-871-3241. Information is also available online at <https://studentaffairs.du.edu/disability-services-program>.

Religious Accommodations

University policy grants students excused absences from class or other organized activities for observance of religious holy days, unless the

accommodation would create an undue hardship. Faculty are asked to be responsive to requests when students contact them **in advance** to request such an excused absence. Students are responsible for completing assignments given during their absence, but should be given an opportunity to make up work missed because of religious observance. Once a student has registered for a class, the student is expected to examine the course syllabus for potential conflicts with holy days and to notify the instructor by the end of the first week of classes of any conflicts that may require an absence (including any required additional preparation/travel time). The student is also expected to remind the faculty member in advance of the missed class, and to make arrangements in advance (with the faculty member) to make up any missed work or in-class material within a reasonable amount of time.

Career & Professional Development

As you go through this course, it is common for questions to arise about how you will use these concepts in a potential career. Feel free to ask faculty members about their career paths and research areas, and also know the University of Denver offers a number of resources to help you on your career development journey. [Career & Professional Development](#) can help you explore your interests, develop your job and internship search skills, and connect you with individuals in the field of your choice. Learn more, schedule an appointment, and see upcoming events at du.edu/career.

Honor Code

Follow the [Honor Code](#) in all activities related to this course. Incidents of academic misconduct will be reported to and investigated by the Office of Student Conduct.

Other

Check the **DU academic calendar** for important dates throughout the quarter: <http://www.du.edu/registrar/calendar/index.html>.