MATH 235 – Mathematical Models and Their Analysis Spring 2021

Class website:	**https://tlakoba.w3.uvm.edu/AppliedUGMath**
Textbook:	None. Use lecture notes posted on the class website.
Class Meets:	MWF: 12:00 – 12:50, (**Remote instructions via MS Teams**)
Instructor:	Dr. Taras I. Lakoba, Innovation Hall, Room E436 (pre-COVID location)
	(802) 656-2610, tlakoba@uvm.edu, https://tlakoba.w3.uvm.edu
Office Hours (via MS Teams)	M: 4:00–5:00 pm; W: 9:00–10:00 am; F: 2:45–3:45 pm; & by appointment.
Important deadlines:	Add/Drop and Pass/no Pass: Friday, February 12;
	Last day to withdraw: Thursday, April 8.
	Last class day: May 10 (M); Reading (no class) day: March 24 (W).

Class objectives: You will learn how the material from undergraduate Calculus and Linear Algebra is used by scientists and engineers in their research related to applied mathematics. You will also practice giving presentations to the audience of your peers.

Computer work: You are encouraged (and expected) to use Mathematica for some of your calculations. Some assignments will require running Matlab codes; however, no prior experience with Matlab is expected.

Projects: There will be two presentation projects: a midterm and a final. The *midterm* presentation (whose exact date will be announced at least two weeks in advance) will be based on a review paper about mathematics behind Latent Semantic Indexing and on supporting background material from Linear Algebra. This will be a class project in that the presentation material will be divided among the students, and each student will have to present only his or her part. However, each student will be required to coordinate his or her presentation with those of the other students. You will be graded on *both the content and the style* of your presentation. Please find more details on the **course website above**.

For your *final* project, you will be required to find and read a paper, of your own choice and make a presentation about it to the class. (In some cases, I may allow two students to give presentation on different parts of the same paper.) The paper has to be related in some way to applied mathematics. Your goal will be to convey the main results of the paper and demonstrate that you were able to follow its calculations.

The official date for the final presentation is .... TBA, but we may have to spread it over more than one day to accommodate all the speakers.

Practicing your presentations: An important objective of this course is to **teach** you to give presentations. Therefore, you will be **required to rehearse each of your two talks in front of me**. This way you can incorporate my feedback to improve your presentation. *If you fail to meet with me for a rehearsal, I will automatically lower your final grade by one level (e.g., from B to B-) per occasion. This will occur irrespective of the grade that you will receive for your presentation.*
   Please see the general outline for both presentations on the back of this sheet.

Grading Policy: Homework: 46%, Midterm project: 24%, Final project: 30%.

Academic integrity: You are expected to read and understand the UVM Academic Honesty policy, found at http://www.uvm.edu/~uvmppg/ppg/student/acadintegrity.pdf .

You are always encouraged to ask me for help outside of class. You may also work with other students on homework problems within the limitations described on the course website (you should read that document before you do your very first homework). Briefly speaking, you may figure out the *idea* of the solution to a problem together. However, the *details* of the solution that you submit must be written **entirely on your own** without consulting **any** outside source. Violations of this rule will be considered academic cheating and dealt with accordingly.

Special accommodation: Students with disabilities who require special accommodation must notify the instructor of their needs within the first two weeks of the semester. They must also provide a formal letter from the Office of Specialized Student Services.

Outline of preparation for presentation projects

Your work on a presentation will involve the following steps:

1. Selection of your topic (for the midterm) or paper (for the final).

2. Obtaining my approval of your selection.   For the midterm talk, this will simply mean that you'll get the part that you have selected on the first-come-first-serve basis. For the final talk, the process is more complex and is described in more detail in the section on Final project in the document Guidelines for your midterm and final presentations posted on the course website.

   Very important: You must obtain my approval (in writing) at least 10 days before the day of the first presentation by anyone in the class (the midterm presentations will be spread over several lecture periods, while the final presentations will all occur on the day of the final exam).
   If you miss this deadline, the following will occur:

   - For the *midterm*, I will assign you the part of the paper that has yet not been taken. You will not be able to dispute or alter my selection.

   - For the *final*, you will not be allowed to give your final presentation, and **your score for it will be recorded as 0**.

3. Scheduling your rehearsal with me.   My availability for rehearsals will be posted at least 2 weeks before the first scheduled presentation. Your responsibility will be to book a time that will work for you. **The penalty** for not scheduling, or scheduling but missing, your rehearsal, will be the reduction of your final numeric grade by 3.34% (i.e., by one grade level, e.g., from B to B-).
   This will occur no matter how perfect your actual talk in class may be.

   You may schedule your rehearsal before selecting your topic or paper. However, the rule in item 2 above about obtaining my approval of your selection will still apply.

4. Preparation of your talk.   Details are given in the respective sections of the document Guidelines for your midterm and final presentations. You are welcome to work with your classmates, and you are strongly encouraged to seek help of the instructor as needed (see the aforementioned document for more detail).

5. Rehearsal.   Details are given in the respective sections of the document Guidelines for your midterm and final presentations.

6. Modifying your talk according to the instructor's suggestions that you have received during the rehearsal.

7. Delivering your talk on the scheduled day.