

## **Math 2250 Differential Equations and Linear Algebra, Spring 2021**

*You are expected to be fully aware of the following policies and expectations, so review this information carefully and ask Prof. Lee if you have further questions.*

### **Instructor / Email / Phone / Office**

Dr. Hwan Yong Lee / [hwanyong.lee@utah.edu](mailto:hwanyong.lee@utah.edu) / 032-626-6201 / U843

### **Teaching Assistant / Email**

Yeju Lee / [u1269688@utah.edu](mailto:u1269688@utah.edu)

### **Class Time/ Location**

Monday and Wednesday 1:00 - 1:50 pm ; Tuesday and Thursday 11:00 - 11:50 am / U403

### **Office Hours**

Monday and Wednesday, 3:00 - 3:50 pm or by appointment

### **Prerequisites**

Grade C or better in Math 1320 OR AP Calculus BC score of 5 AND PHYS 2210 OR Department

Consent. Any questions regarding your readiness for the course should be resolved immediately.

### **Learning Objectives**

Math 2250 is an introduction to differential equations and linear algebra, two important mathematical subjects that are particularly essential in engineering problem solving, and how they are used to model problems arising in engineering and science. The specific objectives are summarized as follows :

- Use general principles to model a phenomenon and derive the relevant governing differential equations.
- Learn solution techniques and visualization tools for first-order separable and linear differential equations.
- Learn matrix algebra techniques, in order to be able to compute the solution space to linear systems and understand its structure.
- Be able to use the basic concepts of linear algebra such as linear combinations, span, independence, basis, and dimension, to understand the solution space to linear equations, linear differential equations, and linear systems of differential equations.
- Understand the natural initial value problems for first-order systems of differential equations, and how they encompass the natural initial value problems for higher order differential equations and general systems of differential equations.
- Learn how to solve constant coefficient linear differential equations via superposition, particular solutions, and homogeneous solutions found via characteristic equation analysis.

- Understand the concepts of eigenvalues and eigenvectors and be able to compute them. Apply them to find the general solution space for first and second order constant coefficient homogeneous linear systems of differential equations.

### **Textbook**

Differential Equations and Linear Algebra, Pearson new international edition, Third edition by C.

Henry Edwards, David E. Penney

### **Canvas**

All announcements and exam information and other details for the course will be regularly posted on [the Canvas website](#) so be sure to check it frequently.

### **Lecture Notes**

My lecture notes will be provided and posted on the Canvas website. Please print it out and read through it prior to coming to class.

### **Practice Problems**

For each section covered in class, I have chosen some practice problems from the textbook to illustrate important concepts and techniques that you are expected to master. These problems can be found on the Canvas website. They are for your benefit and should be worked regularly and in detail. It is only by doing the problems yourself that you will acquire the skills needed for proficiency in the course. Some of these problems will be discussed in the lecture, but it is your responsibility to do the work and look at all of the problems. These problems will not be turned in or graded.

### **Weekly Homework**

Some of the assigned practice problems will be given as homework and you should write your solutions and submit them by their due date. Your solutions should be stated as clearly as possible, showing every step towards your conclusion. The list of homework sets with their due dates will appear on the main page of the Canvas each week.

### **Weekly Quizzes**

There will be 10 quizzes, worth 10 points each. Quizzes will be given on Thursday unless otherwise noted. The tentative schedule of the quizzes can be found on the course schedule. The TWO LOWEST quiz grades will be dropped. There are no make-up quizzes.

### **Exams**

There will be two **IN-PERSON** midterm exams throughout the semester.

- **Exam 1:** Thursday, March 25,
- **Exam 2:** Thursday, May 13

There will be a comprehensive two-hour **IN-PERSON** final exam scheduled during the final exam week at the end of the semester.

- **Final Exam** : TBA

All exams are closed book and closed notes. Calculators or other electronic devices are not permitted for any of the exams.

### **Zoom Session Statements**

If this course must host Zoom sessions, the University of Utah Asia Campus requires that all students turn on their cameras during the entire course and post their full name in English. We ask that students try to locate a quiet space which will allow for ample social distancing and that students not wear a mask if possible. If a student has financial difficulty obtaining the appropriate equipment for online courses, the UAC can help provide resources. It is recommended that Zoom sessions be conducted synchronously. Faculty are not required to record their zoom sessions, this is an individual faculty decision.

### **Regarding Excused Absences and Missing Exams**

The University expects regular attendance at all class meetings. Instructors must communicate any particular attendance requirements of the course to students in writing on or before the first class meeting. Students are responsible for acquainting themselves with and satisfying the entire range of academic objectives and requirements as defined by the instructor.

In order for a student to receive an official excused absence, they must complete a request form in the Office of the Assistant Dean of Students ([kevin.darco@utah.edu](mailto:kevin.darco@utah.edu)) and provide any accompanying documentation with the request. If their request is approved, the Assistant Dean of Students will email all appropriate faculty with this notification.

If a student will be absent from an exam, they must email the Assistant Dean of Students at [kevin.darco@utah.edu](mailto:kevin.darco@utah.edu) prior to the exam.

If you have COVID-19 symptoms, including fever or respiratory symptoms such as cough, phlegm, sore throat, and nasal congestion, you should notify your instructor immediately, call the KCDC for testing guidance, and stay home based on the KCDC's directive. You can return to class if you are clear from COVID-19 symptoms. In order to be excused from your courses, you will need an official medical certification.

### **Self-quarantine Statement**

The University of Utah Asia Campus expects regular attendance at all class meetings. Given the current situation with COVID-19, we have created the following guidelines.

1. If a student has completed less than 50% of the course and is required to self-quarantine, we suggest that the student withdraws from the course. In this situation, all tuition will be refunded with appropriate medical documentation

2. If a student has completed 50-75% of the course and is required to self-quarantine, the Assistant Dean of Students Office will work with the faculty and student to determine the best scenario. If the decision is to withdraw from a course, all tuition will be refunded with appropriate medical documentation.

3. If a student has completed over 75% of the course and is required to self-quarantine, the student and faculty will work together to ensure that the student is able to complete the course. If the student is unable to finish all coursework during the course, a student may receive the mark "I" (incomplete) and work to complete all remaining coursework in consultation with the instructor.

Regular attendance is essential for success in this course. Students are expected to attend all class meetings and be present in class for all examinations. Class policies related to tardiness and absences are clearly stated in this syllabus.

### **Attendance will count 5% of your total grade.**

In addition, the following penalty will be imposed:

- More than TEN absences will cause you to lower your final grade by one letter grade (ex. B→ B-).
- More than TWENTY absences will cause you to fail this course.

*Don't be tardy.* More than 10 minutes late will count as an absence. Make sure to clear up any lateness issues right after class.

Please note that :

- Activities such as work, internships, visiting an embassy, and participation in student clubs are not excused absences.
- Not feeling well on the day of the exam, including having a headache, stomach ache, or cold is not sufficient to be allowed a make-up exam. In order to be excused from an exam due to medical conditions, a student's illness must be severe and require hospitalization.
- In addition, a scheduled or unscheduled doctor appointment is not an excused absence. A note from the IGC medical clinic does not qualify a student for an excused absence.
- There will be no make-up quizzes or exams, except in rare pre-approved situations and last-minute emergencies, both of which require documentation.
- If you have any pre-existing conflict with one of the exams, you must talk to the instructor at the beginning of the semester to schedule a make-up exam.

Emergencies that arise on the day of the exam will also need official documentation, including:

- auto accidents : a police report
- health emergencies that require hospitalization : a note from the attending physician
- death in the family : a copy of the obituary

### **Course Grading**

Your grade will be computed in two different ways (see below). The grade that you earn for the course will be the higher of these options.

	Option1	Option2
<b>Attendance</b>	5%	5%
<b>Homework</b>	10%	10%
<b>Quizzes</b>	20%	20%
<b>Lower Midterm</b>	20%	15%
<b>Higher Midterm</b>	20%	20%
<b>Final Exam</b>	25%	30%

### Grade Cutoffs

Semester letter grades will be converted from numerical semester scores as follows :

A 94-100 %	B+ 87-89.99 %	C+ 77-79.99 %	D+ 67-69.99 %	E 59.99 % or less
A- 90-93.99 %	B 83-86.99 %	C 73-76.99 %	D 63-66.99 %	
	B- 80-82.99 %	C- 70-72.99 %	D- 60-62.99 %	

### Calculators

Calculators will not be permitted on exams or quizzes.

### Electronic Device Policy

Cell phones, laptop computers, tablets, or any other electronic devices are not permitted in this class. They should be placed in manner mode (silent, no vibration) before class begins. I understand that students may want to use a laptop for taking notes, however, laptop use often leads to off-task activities, such as checking email or browsing the internet. This hinders your learning, lowers your engagement in class interactions, and

distracts others around you. If there is ever an exception to this policy for a class activity, I will let you know in advance.

### **Language Policy**

The University of Utah Asia campus is committed to providing and fostering an environment that is safe and free from prohibited discrimination. The following language policy applies to all academic and administrative units of the University and to all members of the University community, including faculty, staff, and students. English is recognized as the official language of instruction, assessment, and curriculum. In addition, English is the official language for all administrative and business-related matters of the University.

### **The Americans with Disabilities Act**

The University of Utah Asia Campus seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the UAC Office of the Dean of Students – [randy.mccrillis@utah.edu](mailto:randy.mccrillis@utah.edu). The UAC Office of the Dean of Students will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the UAC Office of the Dean of Students.

### **Sexual Misconduct**

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the UAC Office of the Dean of Students – [randy.mccrillis@utah.edu](mailto:randy.mccrillis@utah.edu). For support and confidential consultation, contact the UAC Mental Health Counseling, 3052 Multi-complex Building, 032-626-6142.

### **Student Code of Conduct**

All students are expected to maintain professional behavior in the classroom setting as outlined in the Code of Student Rights and Responsibilities, Policy 6-400 of the University Regulations Library (<http://www.regulations.utah.edu/academics/6-400.html>).

### **Wellness Statement**

Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah Asia Campus. For helpful resources, contact the UAC Mental Health Counseling Center; [asiacampus.utah.edu/mental-health-counseling-center/](http://asiacampus.utah.edu/mental-health-counseling-center/); 0326266142. You can make an appointment using this link: <https://appointmentwithjan.as.me/schedule.php>.

## Academic Misconduct

Academic Misconduct includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information, as defined further below. It also includes facilitating academic misconduct by intentionally helping or attempting to help another to commit an act of academic misconduct.

- "Cheating" involves the unauthorized possession or use of information, materials, notes, study aids, or other devices in any academic exercise, or unauthorized communication with another person during such an exercise. Common examples of cheating include, but are not limited to, copying from another student's examination, submitting work for an in-class exam that has been prepared in advance, violating rules governing the administration of exams, having another person take an exam, altering one's work after the work has been returned and before resubmitting it, or violating any rules relating to academic conduct of a course or program.
- Misrepresenting one's work includes, but is not limited to, representing material prepared by another as one's own work, or submitting the same work in more than one course without prior permission of both faculty members.
- "Plagiarism" means the intentional unacknowledged use or incorporation of any other person's work in, or as a basis for, one's own work offered for academic consideration or credit or for public presentation. Plagiarism includes, but is not limited to, representing as one's own, without attribution, any other individual's words, phrasing, ideas, the sequence of ideas, information, or any other mode or content of expression.
- "Fabrication" or "falsification" includes reporting experiments or measurements or statistical analyses never performed; manipulating or altering data or other manifestations of research to achieve the desired result; falsifying or misrepresenting background information, credentials or other academically relevant information; or selective reporting, including the deliberate suppression of conflicting or unwanted data. It does not include honest error or honest differences in interpretations or judgments of data and/or results.

Please refer to the University of Utah Student Handbook and University of Utah online catalog (<http://regulations.utah.edu/academics/6-400.php>) ([Links to an external site.](#)) regarding policies and procedures for grading, attendance, course incompletes, and academic honesty.

### NOTE :

This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.