Syllabus for MA 303 – Summer 2021

Differential Equations and Partial Differential Equations for Engineering and the Sciences

3 credit hours (CRN 29151)

Prerequisites: MA 262 or MA 366 or (MA 265 and MA 266) or (MA 351 and MA 266)

Instructor Contact Information

Instructor: Dr. Kaitlyn Hood **Email:** kthood@purdue.edu
Office: 405 Mathematical Sciences Building **Office Hours:** MTW 2-3pm

Note: Please follow the guidelines below:

- General math questions: post to Piazza
- Personal questions (request for medical extensions, questions about grades, or technical problems with MyLab Math) – first email your TA. If your TA cannot answer your question they will pass it along to Dr. Hood.
- Emails are read between 9am and 5pm on weekdays and will be responded to within 2 business days.

Instructional Modality

This course will be offered in two formats: in-person and fully online.

1. The **in-person cohort** will meet MTWRF at 1:00pm – 2:00pm in Physics Building 203, with the option for students to view recordings of the lectures if they cannot attend in person.
2. The **fully online cohort** will be asynchronous, meaning lecture videos will be recorded and uploaded to Brightspace. Students are expected to watch the videos on their own time and complete assignments by the given deadlines.

Course Learning Objectives

By the end of this course, you will be able to:

1. To solve linear systems of differential equations using the Eigenvalue method.
2. To evaluate and interpret the dynamics of nonlinear systems of differential equations.
3. To compute the Fourier series of periodic functions in order to solve endpoint problems and partial differential equations.
4. To compute eigenvalue expansions and solve Sturm-Liouville problems.
5. To compute Laplace transforms and inverse transforms in order to solve linear differential equations.

Course Web Sites

Important websites for this course are the following:

- *Brightspace* – https://purdue.brightspace.com/d2l/login .
  - This is where you will find the recorded lecture videos and lecture notes for the course, information about the exam, and important course documents. (Both the in-person and fully online cohort will be able to view the lecture videos).
  - Also, **course announcements will be posted here so be sure to check this page regularly**.

- *MyLab Math* – This is the website used for the online homework assignments. **You will need to purchase access to *MyLab Math* to be able to complete this course**. You should always access MyLab Math through the link in the Brightspace course page. Do not log in to MyLab Math directly from the Pearson website as this can sometimes cause problems where your homework scores are not linked to the Brightspace gradebook correctly.
- *Gradescope* – Written HW problems will be submitted through Gradescope (for both the in-person and fully online cohort). You will take a picture of your solution and then upload the picture through Gradescope. Access to the Gradescope website can be found through the link in Brightspace.
- *Piazza* – Discussion forum and online homework help. Click on the link in Brightspace to enroll in the Piazza page for this course.

In addition to the above websites, the math department has a website for this course: http://www.math/purdue.edu/MA303 which has links to some of the important course documents which are also on Brightspace.

Lectures

Lectures will be initially delivered in the in-person lecture on MTWRF at 1pm-2pm (West Lafayette time). These lectures will be recorded on Boilercast and uploaded to Brightspace for the fully-online cohort to watch on their own time.

Homework

There are two types of homework assignments:

- **Online Homework** – these are online assignments completed through *MyLab Math*. Due dates and times are listed in the *MyLab Math* system and on the course schedule. Generally, the online homework will be due Tuesdays at 11:59pm (West Lafayette time).
- **Written Assignments** – these are assignments that you will write your answers by hand and scan and upload to Gradescope. (Alternatively, you can write your solutions on a tablet and export to pdf to upload to Gradescope.) You can access the statement of the problems through Gradescope. Generally, the written homework will be due Tuesdays at 11:59pm (West Lafayette time).

Exams

There will be two midterm exams and a final exam. The following is the schedule for the midterm exams.

- Midterm 1 – Thursday, July 1
- Midterm 2 – Thursday, July 22

The Final Exam will take place during final exam week (exact date and time is still to be determined) and the Final Exam will be comprehensive.
The exams will be conducted differently for the in-person and fully online cohorts:

- *In-person exams* – These will take place in class at 1pm-2pm (West Lafayette time) in Physics Building 203.

- *Fully online exams* – These will be handwritten and **must be taken under the supervision of a proctor** during the 24-hour window starting at 1pm on exam day and ending at 1pm the following day. If you are near West Lafayette, you can arrange to take the exam on campus under the supervision of a proctor. Otherwise, students must select a proctor to be approved by the instructor.

Proctors (fully online cohort only)

At the beginning of class, a survey will be set up for students to nominate their proctor. **Instructions for selecting a proctor will be uploaded to the Brightspace page**. Once the proctor has been approved, then a TA will email a copy of the exam to the proctor to print out. Students will have 60 minutes to write down their solutions to the exam by hand. (Exams will be closed book and closed note, with no calculators allowed). Then the proctor will collect the exam, scan it, and return it back to the TA. We ask that proctors hold on to the exam for one week in case that the scan is poor quality.

Grades

Course grades will be determined by your overall score which will be computed as follows:

Online Homework	25%
Written Assignments	9%
Two midterms @ 16.5% each	33%
Comprehensive Final Exam	33%
	100%

Final course letter grades will be assigned using the weighted totals calculated as above. The grade lines will be at least as generous as the following:

A+(97), A(93), A-(90), B+(87), B(83), B-(80), C+(77), C(73), C-(70), D+(67), D(60)

Policy on Late Homework

Any requests for extensions on homework should be made by contacting the TA for your section (for the fully online cohort) or Dr. Hood (for the in-person cohort). These requests may be accepted or rejected at the discretion of the TA, though in general TAs will be instructed to only accept such requests that correspond to university approved absences or unavoidable circumstances (being busy with other classes or internships, losing track of time, or forgetting the schedule are not acceptable reasons for an extension). At the end of the summer term, the 2 lowest Online Homework scores will be dropped (no Written Assignment scores will be dropped). Students who are forced to miss class for an extended period of time should see Dr. Hood.

Exam grading appeals

Students who wish to appeal their grade on a problem in an exam should submit a regrade request through Gradescope. Regrade requests will only be accepted for 1 week after the grades are returned.

Homework Help

Homework help can be obtained through the discussion forums on Piazza. See the link in Brightspace to access the Piazza page for this course. The purpose of the Piazza forum is to foster student learning. The TAs working on the forum will answer questions on course material and go through problems similar to students' homework problems. The instructors will not do your exact homework problems. Instead, they will go through a similar problem with you to give you another example to work through. This is more beneficial for you, since it better prepares you for exams.

Students should read the Piazza Forum Rules for MA 303 (a pinned post on Piazza) before posting questions. Adhering to these rules (for example, using the correct format to title your question) will help you question get answered faster and will help all students navigate the list of questions that have already been posted and answered.

Calculators

Calculators or other mathematical software may be used on homework, but it is important that you not become too reliant on the calculators. You must be able to do simple manipulations by hand, and calculators will not be allowed for use on the midterms and final exam.

Collaboration

Collaboration on the Survey Questions and Homework (both online and written) is both allowed and encouraged. Discussion with peers is a common and effective way to distill and reinforce your knowledge. Make sure that your work reflects your own understanding. Copying another person's work constitutes academic dishonesty and undermines your own learning progress.

Collaboration with peers or people outside the class is prohibited on Midterms and the Final Exam. It will be considered Academic Dishonesty and result in a zero grade on the exam.

Make-up Policy

Except in unusual circumstances (illness, family emergency, etc., documented), no make-ups will be given on midterms or the final. If you need a make-up exam, you should email Dr. Hood in advance (at least two weeks before the test date).

Academic Guidance in the Event a Student is Quarantined/Isolated

If you become quarantined or isolated at any point in time during the semester, in addition to support from the Protect Purdue Health Center, you will also have access to an Academic Case Manager who can provide you academic support during this time. Your Academic Case Manager can be reached at acmq@purdue.edu and will provide you with general guidelines/resources around communicating with your instructors, be available for academic support, and offer suggestions for how to be successful when learning remotely. Importantly, if you find yourself too sick to progress in the course, notify your academic case manager and notify me via email or Brightspace. We will make arrangements based on your particular situation. The Office of the Dean of Students (odos@purdue.edu) is also available to support you should this situation occur.

Attendance Policy during COVID-19

Students should stay home and contact the Protect Purdue Health Center (496-INFO) if they feel ill, have any symptoms associated with COVID-19, or suspect they have been exposed to the virus. In the current context of COVID-19, in-person attendance will not be a factor in the final grades, but the student still needs to inform the instructor of any conflict that can be anticipated and will affect the submission of an assignment or the ability to take an exam. Only the instructor can excuse a student from a course requirement or responsibility. When conflicts can be anticipated, such as for many University-sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency conflict, when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email or through Brightspace. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor's department because of circumstances beyond the student's control, and in cases of bereavement, quarantine, or isolation, the student or the student's representative should contact the Office of the Dean of Students via email or phone at 765-494-1747. Our course Brightspace includes a link on Attendance and Grief Absence policies under the University Policies menu.

Classroom Guidance Regarding Protect Purdue

The Protect Purdue Plan, which includes the Protect Purdue Pledge, is campus policy and as such all members of the Purdue community must comply with the required health and safety guidelines. Required behaviors in this class include: staying home and contacting the Protect Purdue Health Center (496-INFO) if you feel ill or know you have been exposed to the virus, wearing a mask in classrooms and campus building, at all times (e.g., no eating/drinking in the classroom), disinfecting desk/workspace prior to and after use, maintaining proper social distancing with peers and instructors (including when entering/exiting classrooms), refraining from moving furniture, avoiding shared use of personal items, maintaining robust hygiene (e.g., handwashing, disposal of tissues) prior to, during and after class, and following all safety directions from the instructor.

Students who are not engaging in these behaviors (e.g., wearing a mask) will be offered the opportunity to comply. If non-compliance continues, possible results include instructors asking the student to leave class and instructors dismissing the whole class. Students who do not comply with the required health behaviors are violating the University Code of Conduct and will be reported to the Dean of Students Office with sanctions ranging from educational requirements to dismissal from the university.

Any student who has substantial reason to believe that another person in a campus room (e.g., classroom) is threatening the safety of others by not complying (e.g., not wearing a mask) may leave the room without consequence. The student is encouraged to report the behavior to and discuss next steps with their instructor. Students also have the option of reporting the behavior to the Office of the Student Rights and Responsibilities. See also Purdue University Bill of Student Rights.

Academic Integrity

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information is submitted the greater the opportunity for the university to

investigate the concern. More details are available on our course Brightspace table of contents, under University Policies.

Nondiscrimination Statement

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. More details are available on our course Brightspace table of contents, under University Policies.

Accessibility

Purdue University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, you are encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

In this mathematics course accommodations are managed between the instructor, the student and DRC Testing Center.

If you have been certified by the Disability Resource Center (DRC) as eligible for accommodations, you should contact your instructor to discuss your accommodations as soon as possible. Here are instructions for sending your Course Accessibility Letter to your instructor: https://www.purdue.edu/drc/students/course-accessibility-letter.php

Mental Health Statement

If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try WellTrack. Sign in and find information and tools at your fingertips, available to you at any time.

If you need support and information about options and resources, please contact or see the Office of the Dean of Students. Call 765-494-1747. Hours of operation are M-F, 8 am- 5 pm.

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc. sign up for free one-on-one virtual or in-person sessions with a Purdue Wellness Coach at RecWell. Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is completely free and can be done on BoilerConnect. If you have any questions, please contact Purdue Wellness at evans240@purdue.edu.

If you're struggling and need mental health services: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Emergency Preparation

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors via email. You are expected to read your @purdue.edu email on a frequent basis.

Disclaimer

This syllabus is subject to change. Any changes will be posted in Brightspace.