**Course Information**

Instructor: Peter Howard  
E-mail: phoward@tamu.edu  
Course Time: TR 1:30 p.m. – 2:45 p.m.  
Course Location: HELD 107  
Online Office Hours: M 12:30 p.m. – 1:45 p.m.; W 1:30 p.m. – 2:45 p.m.  
Course webpage: http://www.math.tamu.edu/~phoward/M308.html

**Catalog Description**

Ordinary differential equations, solutions in series, solutions using Laplace transforms, systems of differential equations. Prerequisites: MATH 221, MATH 251, or MATH 253 or concurrent enrollment; knowledge of computer algebra system.

**Course Learning Outcomes**

Upon successful completion of this course, students will be able to: use differential equations to model mechanical and electrical systems; visualize solutions to first order differential equations and 2 x 2 systems of first order linear differential equations using direction fields and phase planes; solve basic first order differential equations and initial-value problems; understand the conditions required for a first order differential equation to have a unique solution; find the equilibrium points of an autonomous differential equation and determine their stability; solve homogeneous second order linear differential equations and initial value problems with constant coefficients; use the methods of undetermined coefficients and variation of parameters to find solutions to nonhomogeneous second order linear differential equations and initial value problems with constant coefficients; use Laplace transforms to solve basic initial value problems; determine the mathematical and practical effect of step functions and impulse functions on second order linear initial value problems with constant coefficients; use power series to solve second order linear differential equations; write a higher order differential equation as a system of first order equations; solve homogenous systems of first order linear differential equations; conduct qualitative analysis of 2 x 2 systems of linear first order differential equations with constant coefficients; understand methods of numerically approximating solutions to first order initial value problems.

**Required Materials**

*Textbook:* The textbook for this course is *Elementary Differential Equations and Boundary Value Problems, 11th Edition,* by Boyce, Diprima, and Meade. Earlier editions will work.

*Technology:* A substantial part of this class will be conducted on-line, and students will require at least the following:

- Appropriate hardware, including a laptop or desktop computer; a second device such as a mobile phone; and a high-speed internet connection.
• Appropriate software, including Zoom on a phone or computer; a PDF reader; a scanning app that will scan pages to PDF; and the latest version of an internet browser such as Chrome or Firefox.

GRADING

Homework: Homework will be assigned on most Thursdays, due the following Thursday. Homework assignments will be completed on-line through Edfinity (edfinity.com). Students will be provided with a link to create an Edfinity account during the first week of classes (there is a $23 fee). Each student’s lowest homework grade will be dropped. Calculators are allowed on homework assignments.

Quizzes: A take-home quiz will be assigned on most Thursdays, due the following Thursday. Quizzes will be assigned on-line via canvas (canvas.tamu.edu), and students will submit PDF scans of solutions into canvas. Each student’s lowest quiz score will be dropped. Calculators are allowed on quizzes.

Python Assignments: Three or four computer-based assignments will be made during the semester, using the programming language Python. The assignments will be posted in canvas, and students will submit PDF scans of solutions into canvas.

Exams: There will be two midterm exams during the semester, and a comprehensive final exam at the end of the semester. The midterm exams will be given during the usual class periods on Thursday, Oct. 1 and Thursday, Nov. 12. All students will take the exams on-line, and class will not have a face-to-face meeting on exam days. As scheduled by the University, the final exam for this class will be given on-line, Friday, Dec. 4, 8:00 a.m. – 10:30 a.m. All exams will be posted through canvas and proctored with Zoom. For the proctoring, students will be required to set up a streaming video camera (cell phone or USB webcam) in such a way that the proctor will be able to view the student’s workspace during the exam. The proctoring sessions may be recorded. In order to receive credit for this course, a student must consent to be proctored in this manner. Each student must have a photo ID for the exams. Calculators are not allowed on exams.

Grades: Each midterm exam will count as 20% of the final grade, and the final exam will count as 30% of the final grade. Homework assignments will count as 15% of the final grade; quizzes will count as 10% of the final grade; and the Python assignments will count as 5% of the final grade. Standard grade ranges will be used: A: 89.5 – 100; B: 79.5 – 89.49; C: 69.5 – 79.49; D: 59.5 – 69.49; F: Below 59.5.

RESOURCES

Help Sessions: Help sessions are an opportunity for students to ask questions and get help with the course assignments. These sessions are led by students who have successfully completed the course, and are open for current students to attend as their schedules allow. Once determined, the schedule will be announced in class, posted on our course webpage, and additionally posted at

http://www.math.tamu.edu/courses/helpsessions.html.

Week-in-Review (WIR): Starting with the second week of classes, there will be two Week-in-Review sessions conducted each week, the first by Dr. Roque-Sol (sponsored by Math Department) and the second by Dr. Reihani (sponsored by the Math Learning Center (MLC)). Each review is open to all Math 308 students to review the topics of the previous week and to provide additional examples. The schedule and problem sets that will be worked during these sessions can be found at
http://mlc.tamu.edu/Online-Help-Services/mlc-week-in-review

**TECHNICAL SUPPORT:** For additional resources about on-line learning in general, see the University’s web site [https://keeplearning.tamu.edu/](https://keeplearning.tamu.edu/), and also the 24/7 TAMU IT Help Desk, [https://it.tamu.edu/help/](https://it.tamu.edu/help/).

**COURSE SCHEDULE**

<table>
<thead>
<tr>
<th>Week of Monday:</th>
<th>Sections Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 17</td>
<td>1.1, 1.2 (Wed., Aug. 19 is the first day of classes.)</td>
</tr>
<tr>
<td>Aug. 24</td>
<td>1.3, 2.1, 2.2 (Tues., Aug. 25 last day for drop/add.)</td>
</tr>
<tr>
<td>Aug. 31</td>
<td>2.3, 2.4, 2.5</td>
</tr>
<tr>
<td>Sept. 7</td>
<td>2.6, 3.1, 3.2</td>
</tr>
<tr>
<td>Sept. 14</td>
<td>3.3, 3.4, 3.5</td>
</tr>
<tr>
<td>Sept. 21</td>
<td>3.6, 3.7, 3.8</td>
</tr>
<tr>
<td>Sept. 28</td>
<td>6.1 (Exam 1 is scheduled for Thurs., Oct. 1.)</td>
</tr>
<tr>
<td>Oct. 5</td>
<td>6.2, 6.3, 6.4</td>
</tr>
<tr>
<td>Oct. 12</td>
<td>6.5, 6.6, 5.1</td>
</tr>
<tr>
<td>Oct. 19</td>
<td>5.2, 5.3</td>
</tr>
<tr>
<td>Oct. 26</td>
<td>7.1, 7.2, 7.3</td>
</tr>
<tr>
<td>Nov. 2</td>
<td>7.4, 7.5, 7.6</td>
</tr>
<tr>
<td>Nov. 9</td>
<td>7.7, 7.8, 7.9 (Exam 2 is scheduled for Thurs., Nov. 12. Tues., Nov. 10 last day for Q-drop)</td>
</tr>
<tr>
<td>Nov. 16</td>
<td>9.1, 9.2, 9.3 (Wed., Nov. 18 is Bonfire Remembrance Day.)</td>
</tr>
<tr>
<td>Nov. 23</td>
<td>8.1, 8.2, 8.3 (Tues. Nov. 24 is last day of class.)</td>
</tr>
</tbody>
</table>

**UNIVERSITY POLICIES**

**COPYRIGHT:** All printed handouts and web-materials are protected by US Copyright Laws. No multiple copies can be made without written permission by the instructor.

**ATTENDANCE:** The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments. Please refer to **Student Rule 7** in its entirety for information about excused absences, including definitions, and related documentation and timelines.

**MAKE-UP WORK:** Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student’s grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor. Please refer to **Student Rule 7** in its entirety for information about makeup work, including definitions, and related documentation and timelines. Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor” (**Student Rule 7, Section 7.4.1**). “The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence” (**Student Rule 7, Section 7.4.2**). Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See **Student Rule 24**.)
ACADEMIC INTEGRITY: Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case” (Section 20.1.2.3, Student Rule 20). You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

“An Aggie does not lie, cheat or steal, or tolerate those who do.”

AMERICANS WITH DISABILITIES ACT (ADA): Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

TITLE IX AND STATEMENT ON LIMITS OF CONFIDENTIALITY: Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking. With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University’s goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need. Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with Counseling and Psychological Services (CAPS). Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University’s Title IX webpage.

MENTAL HEALTH AND WELLNESS: Texas A&M University recognizes that mental health and wellness are critical factors that influence a student’s academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.

COVID-19 AMENDMENTS

CAMPUS SAFETY MEASURES: To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University has adopted policies and practices for the Fall 2020 academic term
to limit virus transmission. Students must observe the following practices while participating in face-to-face courses and course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.):

- **Self-monitoring**—Students should follow CDC recommendations for self-monitoring. **Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.**

- **Face Coverings**—**Face coverings** (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Description of face coverings and additional guidance are provided in the **Face Covering policy** and **Frequently Asked Questions (FAQ)** available on the **Provost website.**

- **Physical Distancing**—Physical distancing must be maintained between students, instructors, and others in course and course-related activities.

- **Classroom Ingress/Egress**—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.

- **To attend a face-to-face class, students must wear a face covering (or a face shield if they have an exemption letter). If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the **Student Conduct office** for sanctions. Additionally, the faculty member may choose to teach that day’s class remotely for all students.**

**PERSONAL ILLNESS AND QUARANTINE:** Students required to quarantine must participate in courses and course-related activities remotely and **must not attend face-to-face course activities.** Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.

Students experiencing personal injury or illness that is too severe for the student to attend class qualify for an excused absence (See **Student Rule 7, Section 7.2.2.**) To receive an excused absence, students must comply with the documentation and notification guidelines outlined in Student Rule 7. While Student Rule 7, Section 7.3.2.1, indicates a medical confirmation note from the student’s medical provider is preferred, for **Fall 2020 only,** students may use the Explanatory Statement for Absence from Class form in lieu of a medical confirmation. Students must submit the Explanatory Statement for Absence from Class within two business days after the last date of absence.

**OPERATIONAL DETAILS FOR FALL 2020 COURSES:** For additional information, please review the **FAQ** on Fall 2020 courses at Texas A&M University.