Welcome to Math 308 Section 513 – Fall 2012

Instructor:	Dr. Jean Marie Linhart	**Email:**	jmlinhart@math.tamu.edu
Office:	Blocker 636	**Phone:**	(979) 845-3261 (department main office)
Office hours:	WTh 3:45 - 5 pm and by appointment		
	Office hours may change. Changes are posted on the course website.		
Instructor's website:	`http://www.math.tamu.edu/~jmlinhart`		
eLearning website:	`http://elearning.tamu.edu`		
Piazza website:	`https://piazza.com/class\#fall2012/math308513`		
Class time:	TTh 2:20 – 3:35 pm	**Location:**	Blocker 128

Important course information and updates/modifications to the course schedule are kept current on the web:
`http://www.math.tamu.edu/~jmlinhart/m308`

Required text: *Elementary Differential Equations: Custom TAMU Edition* by William E. Boyce and Richard C. DiPrima, Wiley and Sons, Inc. ISBN 9781118133712. **An electronic copy of this book is included in the course fee you paid to register for this course. You may also buy a loose-leaf discounted version at Barnes & Noble. Barnes & Noble will be in charge of distributing their access code and instructions for downloading the book.**

Recommended text: *Differential Equations with* MATLAB by Hunt, Lipsman, Osborn and Rosenberg, Wiley and Sons, Inc. ISBN 9780471718123

Catalog Title and Description: (CREDIT 3.0) *Differential Equations.* Ordinary differential equations (ODEs), solutions in series, solutions using Laplace transforms, systems of differential equations. Prerequisites: MATH 251 or equivalent; knowledge of computer algebra systems.

A note on prerequisites: Integration is used repeatedly in solving ODEs. We will review basic calculus integrals and techniques such as trigonometric, logarithmic and exponential integrals, integration by substitution, integration by parts, and integration by partial fractions. Energy put into mastering these will reward you throughout the course.

Course Learning Outcomes: The main course learning outcome is to be able to solve ODEs and apply methods learned in this class to other mathematics, physics, engineering and science classes. You will be able to classify ODEs, you will know multi-step methods for solving different classes of ODEs, and given a specific solvable ODE, you will be able to apply the correct method step-by-step to find solutions.

Grading policy:

Homework and MATLAB	30%	A = 90-100%	S = 70-100%
Quizzes	10%	B = 80-89%	U = below 70%
Two in-class exams	35%	C = 70-79%	
Final Exam	25%	D = 60-69%	
		F = below 60%	
Total	100%		

Attendance and participation may also count as 5% of the final grade. Attendance and participation will only be used to help a student's grade, and it will be determined by judgment of the instructor. If class attendance and participation are insufficient, the final grade will be averaged without. The percentages for the other elements will be reduced proportionately if class participation is averaged in.

Attendance and participation and will be evaluated primarily by a sign-in sheet which will be available at the beginning of class and secondarily by the subjective opinion of the instructor. The sign-in sheet will be collected shortly after class begins, be sure to arrive promptly and sign-in if you want credit.

You may make up an absence from class by attending the Applied Mathematics Undergraduate SEminar (AMUSE) or another approved seminar and getting a signed note from the organizer.

Because of privacy rights, I cannot discuss grades over email or telephone.

Homework: A thorough understanding of the homework handed in or suggested is essential for doing well in the course.

Homework problems and MATLAB assignments can be found on the course web page. Homework may be collected as often as daily. Late homework is not generally accepted, but it may be accepted at the discretion of the instructor; an early request is more likely to receive a positive response.

Working with others on the homework and MATLAB assignments is encouraged. There are some guidelines on my website for working together.

Quizzes: Quizzes are given at the **beginning of class**. They will be given approximately weekly; solutions will often be worked out immediately afterwards in class. Quizzes are intended to be challenging and to prepare you for exams. The lowest two quiz scores will be dropped; this is intended to take care of excused and unexcused absences; there are no make-ups for missed quizzes. If you have an extended excused absence or repeated excused absences so that two drops do not cover the quizzes you miss, you will need to come talk to me and bring me the documentation for these.

Exams: There will be two in-class exams and a comprehensive final.

Tentative Exam Schedule	**Final Exam**
Exam 1: Thursday, September 27, 2012	Wednesday, December 12
Exam 2: Thursday, October 25, 2012	1 pm - 3 pm

If a change needs to be made to the exam schedule, an announcement will be made in class, and information will be updated on my website.

Any questions regarding grading/scoring of exams must be made before the exam leaves the room or no change in grade will be made. If you need more time to look at an exam and do not want to lose your right of protest, hand it back to me at the end of class, and arrange to come to office hours.

The learning process: Mathematics is not a spectator sport. You learn through practice and participation. Plan on budgeting at least 6 hours a week for work outside of the classroom.

- Actively listen to the lecture, think, ask questions.
- Work homework problems, read the book, ask questions.
- Do MATLAB assignments, ask questions.
- Take a quiz, ask questions.
- Take an exam, reflect on what you were able to do or not, and why, ask questions.

Communication: We will use Piazza this semester to take care of class announcements and questions about the class.

Email is the preferred way to leave private messages for me. I usually respond within 24-48 hours. When writing to me, please include your full name and course. There are some email writing tips on my website.

The phone number above is for the main office for the Math Department in Blocker. You can leave a message for me there. You will probably get a faster response by using email.

Course information will be posted on Piazza. Please plan on checking it daily.

Course topics and schedule: The intended course schedule is posted on
`http://www.math.tamu.edu/courses/math308/currentsched.html`.

Tentatively:
Week 1: Sections 1.1-1.3; Direction fields, solutions, classification of differential equations.
Weeks 2-3: Chapter 2; First-order equations: Linear, separable, modeling, existence and uniqueness theorem, autonomous and exact equations.
Week 4: Section 8.1-8.3; Numerical methods: Euler method, Runge-Kutta method
Weeks 5-7: Chapter 3; 2nd order equations: homogenous equation with constant coefficients, Wronskian, repeated roots and reduction of order, undetermined coefficients, variation of parameters, vibrations.
Week 8: Introduction to systems of differential equations
Weeks 9-12: Chapter 6; Laplace Transform methods for solving differential equations: definition, solving initial value problems, step functions, differential equations with discontinuous forcing functions, impulse functions (the delta function), convolution integral
Weeks 12-13: Chapter 7: Linear systems of differential equations: Review of matrices, eigenvalues and eigenvectors, 1st order systems with constant coefficients.
Weeks 14-15: Chapter 5: Series solutions, review.

What we are working on and what is coming up will be updated regularly on our course website.

Make-ups and Excused Absences: Make-ups are only given if written evidence of an official University excused absence is provided in a timely manner. (See *University Student Rules.*, `http://student-rules.tamu.edu/`). Let me know what is going on in writing, in advance, if possible. If there is an accident or an emergency that precludes advance notice, call me immediately and get me documentation of the emergency in writing as soon as you can. If I don't hear from you within 2 working days of the absence, I will not allow a make-up. It is your responsibility to schedule a make-up!

The "explanatory statement for absence from class" form is not sufficient written documentation for an excused absence. If you are ill or injured, you need to provide me with a note from a health care professional excusing you from work or school. You may go to your own doctor or to the Student Health Center in Beutel and obtain such a note.

The note should provide me with all information I need to confirm that your absence is excused, i.e., phone numbers and email addresses.

Since the lowest two quiz scores are dropped, and quiz solutions are often worked out in class immediately after the quiz, there are generally no make-ups for quizzes; only for exams.

Scholastic Dishonesty: You are encouraged to work together on the suggested homework problems, but do not copy another student's work. If you are unsure of what this means with regards to scholastic dishonesty, guidelines for working together are available on my website, and I will be happy to answer questions about this.

Always abide by the Aggie Code of Honor.

AGGIE HONOR CODE:

> "An Aggie does not lie, cheat, or steal or tolerate those who do"

When you accepted admission to Texas A&M University you assumed a commitment to uphold the Honor Code.

For additional information please visit `http://www.tamu.edu/aggiehonor/`.

Extra help: The Mathematics Department offers help sessions both for the course material and Calclab open hours for help with MATLAB. These are drop in hours where you can get help on your homework and other problems. Also feel free to ask questions in class, to come by my office hours, or to make an appointment to see me.

Americans with Disabilities Act (ADA) Policy Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with

disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1637.

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