

**MATH 308: Differential Equations**  
**Texas A&M, Summer 2014**, Section: 101, CRN: 10422  
**Lecture:** M,W,T,R,F, 10:00 am-11:35 am, Blocker Building 128

**Instructor:** Dr. Adam Larios **Email:** [alarios@math.tamu.edu](mailto:alarios@math.tamu.edu)  
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**Office Hours:** M,W,T,R,F, 9:00 pm - 9:50 pm, or by appointment

**Prerequisites:** MATH 251 or equivalent with a grade of C or better, basic knowledge of computers and the ability to handle programming or computer algebra systems (e.g., Sage, Mathematica, Maple, or something similar; or Matlab, C/C++, Python, Java, Fortran, etc.) We will be using Matlab in this course.

**Textbooks:** *Elementary Differential Equations: Custom TAMU Edition*. W. Boyce, R. DiPrima. John Wiley and Sons, Inc, 2011. ISBN: 9781118133712. **Note: this is a special edition made for Texas A&M. It is a shortened version of the 9<sup>th</sup> edition.**

*Differential Equations with Matlab, 2nd Edition*. Wiley, B. Hunt, R. Lipsman, J. Osborn, J. Rosenberg. John Wiley and Sons, Inc, 2005. ISBN: 9780471718123.  
**(Optional)**

**Contacting me:** The best way to get in contact with me is by email, [alarios@math.tamu.edu](mailto:alarios@math.tamu.edu). Please put [MATH 308] somewhere in the title and make sure to include your whole name with your email. Polite, courteous emails are appreciated; see my website for tips on email etiquette. My office is in Blocker Building, 641 C, and my office hours are M,T,W,R,F, 9:00 pm - 9:50 pm. Drop-ins are welcome during these times. If you want to meet me at a different time, please email me, and we will try to schedule a time to meet.

**NOTE:** Because of privacy rights, **I cannot discuss grades over email or telephone. Please do not email me asking about your grade. I will not be able to give you any information.** Of course, I am happy to discuss grades in my office.

**Motivation:** Differential equations lie at the heart of an extremely large number of natural phenomena. Our understanding of these equations and their solutions has yielded a massive amount of progress for the human race. Furthermore, the unsolved problems are enormously varied, rich, and challenging. Research in differential equations is found at the cutting edge of nearly every discipline in science and mathematics, and progress often requires cutting-edge mathematical tools and extreme computational power.

In this course, we will start at the beginning, and focus on the most basic differential equations, known as “ordinary differential equations” (ODEs). Even at this level, the equations involved are incredibly useful in modeling nature, and will require us to develop sophisticated and beautiful mathematics to handle them.

The student learning objectives for this course involve classifying ODEs and developing techniques for finding all solutions of general equations in certain classes. Major topics covered will include: ordinary differential equations, numerical solutions, solutions using Laplace transforms, and systems of differential equations.

**Homework:** Homework is designed to help students understand the material and to prepare them for the quizzes and exams. Homework assignments will be posted on the website.

**Collaboration:** Collaboration is encouraged in this course. However, copying someone else's work and submitting it as your own is unacceptable. This act of academic dishonesty will be prosecuted in accordance with university policy.

**Quizzes:** There will be weekly (or almost weekly) Quizzes administered in class. **No make-up Quizzes will be given; however, the lowest two quiz scores will be dropped.** You are required to bring and possibly present your Aggie Card or a government issued ID card when taking exams.

**Electronics:** There will be no calculators (or other non-medical electronic devices) allowed on exams and quizzes, unless otherwise stated. Laptops, cell phones, and other electronic devices, are not allowed to be used during class or exams, unless otherwise stated. Cell phones must be set on vibrate or off. If you need to take a call, send a text message, etc., please quietly leave the classroom to do so, so that you do not distract other students. You are welcome to return to class quietly when you are finished. If you wish to take notes using an electronic device, you must first demonstrate to me that you can type or write fast enough to do so properly, and that you can do it without distracting others, before the privilege to use such devices may be granted. If you are found to be abusing this privilege, you risk forfeiting it.

**Grading:** Your minimal course grade will be computed as follows.

Homework:	15%	A	90%	–	100%
Quizzes:	15%	B	80%	–	89.99%
Midterms:	40% = 2 × 20%	C	70%	–	79.99%
Final Exam:	30%	D	60%	–	69.99%
Project:	(see below)	F	0%	–	59.99%

**Project:** There will be a Matlab project. Details about the specifics of the project will be provided when the project is assigned. The project is optional, but highly recommended. The grade of your project can be used to replace the lowest 15% of one of your homework, quiz, or mid-term exam grade categories, with each exam counted separately. This will be done automatically (there is no need to request it), and it will only be done if it benefits your grade.

**Attendance:** Daily attendance for class lectures is expected and is extremely important. While attendance is not recorded, missing even one class will put you behind. Note that there is a strong correlation between class absences and poor grades. You are responsible for all material and announcements in class regardless of whether or not you attended. **You are also responsible for making arrangements with another classmate to find out what you missed. You should not ask me to go over material you missed (due to tardiness or absences) during office hours or over email.**

**Make-up exams:** Make-up exams will only be given with written evidence of an official university excused absence. Section 7.3 of the University Student Rules states that for an absence: “to be excused the student must notify his or her instructor in writing (acknowledged email message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (e.g., accident or emergency) the student must provide notification by the end of the second working day after the absence. This notification should include an explanation of why notice could not be sent prior to the class.”

**Incompletes:** A grade of “incomplete” may be considered if all but a small portion of the class has been successfully completed, but the student in question is prevented from completing the course by a severe, unexpected, and documented event. Students who are simply behind in their work should consider dropping the course.

**Special Services:** The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protections for persons with disabilities. Among other things, this legislation provides 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 Disability Services, Cain Hall, Room B118, (979) 845-1637. For additional information, visit: <http://disability.tamu.edu>

**Copyright policy:** Printed materials disseminated in class or on the web are protected by copyright laws. One Xerox copy (or download from the web) is allowed for personal use. Multiple copies or sale of any of these materials is strictly prohibited.

**Grade Questions:** Any questions regarding grading/scoring of homework, quizzes, exams, or projects must be made within two class days from when they were handed back, or no change in grade will be made.

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**Honor Code:** Academic dishonesty is taken extremely seriously, and will be dealt with according to university policy. Always abide by the Aggie Code of Honor: “An Aggie does not lie, cheat or steal, or tolerate those who do.” For additional information, please visit: <http://www.tamu.edu/aggiehonor>

**Useful Websites:** Course Website: [www.math.tamu.edu/~alarios/courses/TAMU/2014\\_summer\\_M308/content.html](http://www.math.tamu.edu/~alarios/courses/TAMU/2014_summer_M308/content.html)  
My Website: <http://www.math.tamu.edu/~alarios>  
Department of Mathematics: <http://www.math.tamu.edu>  
Campus emergency: <http://studentaffairs.tamu.edu/emergency>  
Student Rules: <http://student-rules.tamu.edu>  
Aggie Honor: <http://aggiehonor.tamu.edu/>  
Disability Services: <http://disability.tamu.edu>

**Exams:**

You are required to bring and possibly present your Aggie Card or a government issued ID card when taking exams, as well as standard writing materials.

- **Midterm Exam 1:** Tuesday June 17, Blocker 128.  
Material: Chapters 1,2,8, and Sections 7.2, 7.3
- **Midterm Exam 2:** Tuesday July 1, Blocker 128  
Material: Chapters 3, 6, and 7
- **Final Exam:** Monday July 7, 12:30:30 p.m., Blocker 128  
Material: Comprehensive—all material from the course.

**Rough schedule:**

The following tentative schedule is a rough guide to the material covered in the course, but is subject to change. **Updates and changes to the content will be announced in class or on the course website.**

#	Day	Date	Material	Notes
1	M	6/2	1.1, 1.2, 1.3	
2	T	6/3	2.1	
3	W	6/4	2.2, 2.3	
4	R	6/5	2.4, 2.5	
5	F	6/6	2.6	
6	M	6/9	2.7, 8.1	
7	T	6/10	8.2, 8.3	
8	W	6/11	8.4, 8.5	
9	R	6/12	7.2	
10	F	6/13	7.3	
11	M	6/16	3.1	
12	T	6/17	Exam 1	In Class
13	W	6/18	3.2	
14	R	6/19	3.3, 3.4	
15	F	6/20	3.5, 3.6	Q-drop Deadline
16	M	6/23	6.1, 6.2	Project Due
17	T	6/24	6.3, 6.4	
18	W	6/25	6.5, 6.6	
19	R	6/26	7.1, 7.4	
20	F	6/27	7.5, 7.6	
21	M	6/30	9.1	
22	T	7/1	Exam 2	In Class
23	W	7/2	9.2	
24	R	7/3	9.3, 9.4	
25	F	7/4	Review	
26	M	7/7	Final Exam	In Class

**Disclaimer:**

While this syllabus was prepared carefully and according to information available at the beginning of the semester, changes may be necessary in the interest of good teaching. Changes to any of the information above will be announced in class and posted on the class web site. This includes in particular possible updates or corrections to the syllabus, and changes of exam dates.