

Welcome to Math 442 Sections 930 and 931 – Spring 2013

Instructor:	Dr. Jean Marie Linhart	Phone:	(979) 845-3261 (Math Dept. main office)
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Office hours:	Monday 4-5 pm, Thursday 3:45-4:45 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#spring2013/math442930931		
Class time:	Sec. 930: TTh 9:35 – 11:10 am	Location:	BLOC 123
	Sec. 931: TTh 2:20 – 3:35 pm	Location:	BLOC 123

Important course information and updates/modifications to the course schedule are kept current on the web:

<http://www.math.tamu.edu/~jmlinhart/m442>

Recommended texts:

- Mike Mesterton-Gibbons *A Concrete Approach to Mathematical Modelling* John Wiley & Sons, Inc, 2007 ISBN 978-0-470-17107-3 This is available in an electronic edition from the TAMU Library.
- Helmut Kopka and John Daly, *A Guide to L^AT_EX*. If you do not already know L^AT_EX you will find this useful for learning and for reference. There is also plenty of information and resource material on the course website and via Google if you are adept at searching for answers to your questions.
- Rudra Pratap *Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers* Oxford University Press, USA ISBN: 978-0199731244 If you do not know a compiled programming language nor have familiarity with MATLAB, I strongly recommend you buy this book, start reading it and using it for a reference. There is also plenty of information and resource material on our course website and via Google if you are adept at searching for answers to your questions.

Catalog Title and Description: (CREDIT 3.0) *Mathematical Modeling* The construction of mathematical models from areas such as economics, game theory, integer programming, mathematical biology and mathematical physics. Prerequisites: MATH 304 and 308 or equivalents.

Main Course Learning Outcomes:

1. Students will learn about a variety of mathematical models and the process of making mathematical models.
2. Students will learn to make good assumptions, judgments, corrections and changes in a modeling situation. In particular, students will learn to make good judgments in order to determine why a model does or does not reflect reality, to predict what results they should see, and to correct models that produce wrong results.
3. Students will be able to explain mathematical/scientific/technical information correctly, completely and clearly in writing and in oral communication.
4. Students will solidify their knowledge of basic differential equations, as well as other topics including curve fitting, and use these in modeling situations.
5. Students will learn to read material at or above their current knowledge level, identifying main points, outlining or summarizing the material, identifying parts not understood and whether or not these are important.
6. Students will gain proficiency with L^AT_EX and MATLAB .

7. Students will learn to use MATLAB to get numerical results for a mathematical model, to test hypotheses and different scenarios, and to graphically display information.
8. Students will learn how to cooperate and collaborate with peers and experts to complete assignments and projects.

Course Outline and Schedule

The course outline and schedule are available on the course website. Student interests and understanding may dictate a change in schedule; this will be posted on the website.

Grading policy: Grades will be based on

Assignment type	Total Points	Final Grade	Point range
Final Writing/Communication projects	250 points	A	≥ 540 points
Project work	200 points	B	480-539 points
Weekly assignments and attendance	150 points	C	420-479 points
Total points	600 points	D	360 - 419 points
		F	≤ 359 points

Note: You must pass the writing/communication part of the course in order to pass the course.

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

Writing assignments will always be at least 33% of the final grade, other than that, these percentages are subject to adjustment at my discretion to reflect particularly excellent or ambitious work. A modeling project developed wholly by a student or group of students, for example, may receive extra weight. Adjustments to the percentages listed above will only be used to improve a student's grade.

Writing and communication assignments are all **individual** assignments.

Most project work will be done with a group, and grades on projects will be based on both individual and group work.

Extensions: Students are encouraged to ask for extensions if they run into difficulties requiring work to come in late. Extensions requested 24 hours before an assignment due date are likely to receive a favorable response.

Late work: Late work (without an instructor-granted extension) will be penalized at 5% for the first day and 10% per day thereafter. Work that is more than 5 school days late without an instructor approved extension (Monday through Friday, weekends excepted) will not generally be accepted for credit.

Weekly Assignments and Attendance:

- Attendance will be evaluated by giving students 1 point for each day class is attended and the sign-in sheet is signed at the beginning of class.
- **Remember to sign-in; the sign-in sheet will not be available after the first few minutes of class.**
- Students do not retain attendance points in the event of an excused absence, but they can make up an excused absence from class by attending the Applied Mathematics Undergraduate SEminar (AMUSE), or another approved by me, and having their presence confirmed by the faculty member in charge. If an absence is not excused, half of the points for attending class may be made up this way.
- With 28 class days plus a final exam there are 29 attendance points possible.
- Students are expected to earn 10 points over the course of the semester by attending 2 seminars and writing up a short report on the seminars. AMUSE is recommended and always approved, get my permission for others.

- Students are expected to acquire 12 participation points over the course of the semester for coming to the board and helping explain a concept in class.
- The remaining points will come from weekly assignments (when projects and writing are not due); these will often be related to the next project or writing assignment due, and will include rough drafts. Assignments will often be worth 10-20 points, but may occasionally be worth more.
- There will be 7-10 assignments made over the course of the semester, each worth 10-20 points.
- If the points for this section of work is more or less than 150, points will be totaled and rescaled to 150.

Writing assignments:

- There will be 4 writing assignments (W1-W4).
- With the exception of W4 (the Final Portfolio assignment), a rough draft will be due the week before the assignment is due. Points will be assessed in the category of weekly assignments. This will allow time for you to get feedback on your work.
- The final draft will be submitted as a PDF file to TurnItIn on eLearning.
- The first assignment, W1 will be to write an essay on what is mathematical modeling. This will be approximately 500 words long. It is worth 25 points and it is due on Thursday of the second week of class.
- The second assignment, W2, will be 1000 to 1500 words (2-3 pages) plus a bibliography from Project 1. It is worth 50 points, and the final draft will be due on Thursday during the 4th week of class.
- The third assignment, W3, will be 1000-1500 words (2-3 pages) plus a bibliography from Project 2. It is worth 50 points and it will be due the Thursday of the 7th week of class.
- The final writing assignment, W4, is your final portfolio from the class. This will require a minimum of 1500 words of writing, plus an example of your best 700-1000 word writing sample from the class, graphs you've produced or code. This will be due by midnight on Friday, May 3, 2013. Questions relating to the final portfolio will be done as assignments earlier in the semester. The final portfolio description is available on the course website. It is worth 75 points.

Presentation:

- Students must **individually** give a 10-15 minute presentation or make a 5-10 minute video about an assignment or project over the course of the semester.
- I would like to encourage and would be very happy to receive a good video that is an overview of our Mathematical Modeling course and the assignments we do; this will also fulfill presentation requirement.
- Students are encouraged to make their presentation or show their video at the Applied Mathematics Undergraduate SEminar (AMUSE) at the end of the semester.
- The presentation or video is worth 50 points.
- If students do extra and good work, up to 25 extra credit points may be earned; excellent work on a video may also be granted extra credit.
- Extra credit points will first be added to the presentation portion of the grade, and then may be added to the assignment or project portions of the grade at the discretion of the instructor.
- Extra credit will only be granted for good work; work that is mediocre in quality will not be granted extra credit points even if it is in addition to the regular presentation/participation requirement.

- Presentations and videos are generally given/shown during the final week of class or at the AMUSE seminar during that week, or at the final exam period. Students are encouraged to give a presentation or make a video earlier in the semester if they are prepared to do so.
- We will probably need extra time for student presentations; we will use our final exam periods for these.

Section 930: Friday, May 3, 2013: 12:30 -2:30 pm

Section 931: Wednesday, May 8, 2013: 1-3 pm.

Projects: There will be 3 projects. Due dates and descriptions are on the course website. Students are encouraged to collaborate with classmates to find their own final project, and if so, this may be worth more credit toward the final grade than taking a project ready-made from the instructor. Developing your own project is one way students can obtain my permission to do less early project work and assignments and have projects count for more of the final grade. Likewise, a more ambitious project or projects are worth more than less ambitious ones, and if started early in the semester, can result in lowered requirements on other assignments and projects with my permission. More ambitious projects may also modify the percentages of projects versus regular assignments, increasing the grade weight on the projects.

The learning process: Mathematics is not a spectator sport. You learn through practice and participation. You need to budget at least 5-7 hours a week for work outside of the classroom.

- Actively listen and participate in class, think, ask questions.
- Work on assignments, read the book, ask questions.
- Work on projects, ask questions.
- Look over comments from on assignments, reflect on how to improve your work; ask questions.

The classroom: You will often be asked to work and think during class. Ask questions. Answer questions. Get involved with what is going on. Not everything you are expected to know is covered in the textbook. Come to class, participate, pay attention, take notes, work, and think while you are there. Presentation points are given for going to the whiteboard to contribute to collaborative lessons in the classroom.

Working with others: Working with others is encouraged and will often be required. There are two big secrets to successful work with others. The first is to work ahead of the deadline; I will encourage you to do this by making things due in advance of the big final deadlines. Take this seriously and have thorough work prepared. It doesn't have to be perfect! The feedback you get from me and others will help you improve it. The second secret to success is to communicate. Ask your partner(s) for feedback on your work. Make sure you come to an agreement about when you are meeting up and where – put this in writing. Get phone numbers for quick communication. When things go wrong for someone at the last minute, you don't want to be out of touch.

Keep track of what you and others do; you will hand in a Group Work Assessment with collaborative projects to tell me who did what and how you think credit should be apportioned. Your fair self-evaluation and evaluation of your group members will reflect well on you. I will take the feedback as a guideline in making my own judgments about how to score the assignment.

There are additional guidelines on the course website for working together on more traditional homework assignments, but for this course you may be given more specific instructions in writing or in class.

You want to have a thorough understanding of each aspect of an assignment or project, so make sure you work closely with your group so that you understand what is going on with each step. In particular, make sure you understand the mathematics, the MATLAB programming, the choice and construction of graphical output and the meaning of the graphical output and numerical results.

Research, Citations, Plagiarism, Peer Review: Assignments and projects will often involve research whether over the web or through the library. Multiple references in a bibliography will be

required. Quoted material must be quoted and cited, and any reference you use to gain knowledge should be properly cited. Paraphrasing is allowed and requires a citation.

We will also peer-review each other's work in the class; this means you will be privy to what your classmates have prepared for various assignments. I strongly encourage you to learn from what your classmates do. If you wish to incorporate a classmate's idea or ideas into your work, let your classmate know you found their idea(s) valuable, and ask your classmate if you may incorporate their ideas into your work with an appropriate citation – this is common courtesy. When you incorporate a classmate's idea or ideas into your work, you must provide a citation indicating that you got the idea(s) from the classmate.

You must never copy another author's or classmate's work without appropriate quotation and citation.

I am **always** happy to help you figure out how to properly cite something. It is better to hand in an assignment a day late with proper citations than to risk a problem with **scholastic dishonesty**. This can result in an F* in the course. Scholastic dishonesty will be reported to the Aggie Honor System Office (<http://aggiehonor.tamu.edu>).

Due Dates: Assignments, projects and due dates will be posted on the course webpage; later dates may be given on <http://elearning.tamu.edu>, **the ones on the course webpage are correct**. Late work is not encouraged, and there is a penalty for handing assignments in late; if you must hand something in late, obtain permission from me as soon as possible. Work that is more than 5 class days late is will not be accepted for credit.

Exams: There will be no exams in this course. Your assignments, projects, presentation(s) and final portfolio will make up your final grade.

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.

You may use the phone to leave me a message, but I will probably get an email more quickly than a phone message.

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

Make-ups and Excused Absences: Students should make arrangements in advance if they are not able to hand an assignment in on time. If an assignment must come in late due to illness, accident or emergency, you must inform me of the problem within 2 working days. (See *University Student Rules*, <http://student-rules.tamu.edu>). Let me know what is going on in writing, in advance, if possible. If I don't hear from you within 2 working days after the last day of the excused absence, I will not allow the assignments to come in late. You should get assignment handed in as soon as possible after missing it. It is your responsibility to schedule with me when it will come in. If it is not made up within 30 days, you will not receive credit for it.

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. Doctor visits at the Student Health Center are free to students. Ask for an excuse when you are seeing the doctor.

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

Scholastic Dishonesty: You are encouraged to work together on the assignments, but do not copy another student's work, or work from a reference or resource. If you are unsure of how to properly cite and credit a source, please ask for help. Guidelines for working together are available on the course 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://aggiehonor.tamu.edu>.

Extra help: Please ask questions in class, come by my office hours, or make an appointment to see me. Math 442 students need my help for technical support with MATLAB and L^AT_EX; plan on visiting me and asking me questions **at least once a week**.

The Calclab also has open hours for basic MATLAB help: Most likely hours will be BLOC 128, Monday-Thursday 7pm–10pm and Sunday 1pm–10pm. Updates will be posted on <http://calclab.math.tamu.edu>

The University Writing Center offers help with writing and presentations. This is an awesome resource, but book time with them in advance!

<http://writingcenter.tamu.edu>

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. <http://disability.tamu.edu>

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