

Math 151 Engineering Mathematics I  
Sections 510-512  
Fall 2012

**Instructor:** Fanny Dos Reis

**Office:** Blocker 604A

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**Web Page:** <http://www.math.tamu.edu/~fdr>

**Class Forum:** <http://piazza.com/tamu/fall12012/math151510805/home>

**Lectures:** TR 9:35-10:50AM HELD 105

**Office Hours:** TR 2:30-4:00PM, or by appointment

**Teaching Assistant:** Spencer Patty ([srobertp@gmail.com](mailto:srobertp@gmail.com))

**Note:** Check these websites regularly for class announcements, important information, class notes and daily schedule.

**Textbooks:** Online access to Webassign and eBook is included in the registration fees.

<http://www.webassign.net/tamu/login.html>

Consequently, students do not need to purchase an additional access code nor do they need to purchase a hard copy of the textbook unless they desire to do so:

*Calculus: Early Vectors*, preliminary edition (hard back),  
by Stewart et al, published by Brooks/Cole.

The computer laboratory will use *Matlab; An Introduction with Applications* 4th edition by Gilat.

**Learning Outcomes:** This course is an introduction to vectorial, differential, and integral calculus. At the end of the course, students should be able to

- Understand and apply vector operations in 2-dimensions, including dot product.
- Know and use the techniques of limits and differentiation.
- Apply techniques of differentiation to a variety of situations, including engineering applications.
- Understand the relationship between derivatives and integrals via the Fundamental Theorem of Calculus.
- Use Computer Algebra System such as Matlab to solve applied problems.

**Exams:** There will be 3 exams (common to all 151 students) and a comprehensive final exam (see the schedule below). Common exams are administered in the evenings. Locations for common exams will be posted on

<http://www.math.tamu.edu/courses/math151/commonexamsched.html>

and announced in class.

- **Exam 1:** Thursday, September 27, 2012, 7:30PM-9:30PM.
- **Exam 2:** Thursday, October 25, 2012, 7:30PM-9:30PM.
- **Exam 3:** Tuesday, November 27, 2012, 7:30PM-9:30PM.
- **Final Exam:** Friday, December 7, 2012, 12:30PM-2:30PM, HELD105

**In-Class Assignments:** At various times throughout the semester, you will be given in-class assignments during lecture which must be completed before leaving class. Most of the time, the in-class assignments will be given at the beginning or the end of class. Students may be allowed to use class notes, so it is imperative that you always have class notes on paper with you for each lecture. The use of electronic devices won't be allowed during the assignment. None of the grades on these assignments may be dropped unless you are missing a grade due to a verified University excused absence. One of the In-Class Assignment grade will evaluate your participation in class and on Piazza through the semester.

**Recitation:** Every Wednesdays, students will attend recitation. During this time, weekly activities will be assigned. Students will work with partners during recitation, and they will complete the activity, with the supervision/help of the TA. Notes are allowed during each activity, but calculators are not permitted. At the end of the 50 minutes, students will turn this in for a weekly graded assignment.

**Matlab:** Every Mondays, students will attend Matlab. Students will work on the assigned Matlab or ask the TA questions over homework. Visit the link below for Matlab assignments.

<http://www.math.tamu.edu/courses/math151/matlabsched.html>

**WebAssign:** Online homework (WebAssign) is required in all math 151 classes. For each homework, a 'practice' will be available. Students are highly encouraged to work the (non graded) practice homework before working the associated 'graded homework'. Do not wait until last minute to complete the online homework! All information on WebAssign can be found here:

<http://www.math.tamu.edu/courses/eHomework/>

**Academic Integrity Statement:** "An Aggie does not lie, cheat, or steal or tolerate those who do". I further refer the student to the Honor Council Rules and Procedures on the web at

<http://aggiehonor.tamu.edu>

**Students with Disabilities:** 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 Disability Services, in Cain Hall, Room B118, or call 845-1637. For more information, visit

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

**Grades:** Your grade will be determined by 3 exams, a comprehensive final, and the lab grade/online homework as follows:

- Exam I:  $\left(\frac{1}{6}\right)$  of course grade)
- Exam II:  $\left(\frac{1}{6}\right)$  of course grade)
- Exam III:  $\left(\frac{1}{6}\right)$  of course grade)
- Final Exam:  $\left(\frac{1}{4}\right)$  of course grade)
- Recitation Activities:  $\left(\frac{1}{20}\right)$  of course grade)
- In-Class Assignments:  $\left(\frac{1}{20}\right)$  of course grade)
- Matlab:  $\left(\frac{1}{10}\right)$  of course grade)
- WebAssign (homework):  $\left(\frac{1}{20}\right)$  of course grade)

**Make-Up Policy:** No make-ups will be given without written evidence of an official University excused absence. (See *University Student Rules*.) According to Section 7.3 of the *University Student Rules*, for an absence to be considered excused, ‘the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible, 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. ‘If no such notice is given, the rights to a make-up are forfeited. In addition (and also in accordance with *University Student Rules*), a written excuse must be presented upon return to class. Specifically, in the case of illness or injury, students are required to obtain a confirmation note from a health care professional affirming date and time of a medical office visit regarding the illness or injury and confirming the need of absence before a make-up will be given.

**Copyright Policies:** All 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, sale, or upload on a different website of any of these materials is strictly prohibited.

#### **Sources of Help and Preparing for Exams:**

1. **Office Hours:** I am here to help you but I can’t help if I don’t know there is a problem. I encourage each of you to talk to me, ask questions both in and out of class, and come to office hours. Your best bet for success is active participation!
2. **Class Notes:** An outline of notes will be posted before each class day. It will be beneficial to print these out and bring them with you to class. You should review your notes after class, and make sure you get any questions you have about the material answered before the next class day.
3. **Week-in-Review:** Each week, I will conduct a Week-in-Review that covers concepts taught during previous the week. It will be held in BLOC 102 on Sundays from 6:30-8:30PM.
4. **Class Forum** This class has a Piazza forum. This is is an online forum for for discussions of topics covered in class. It offers you the possibility to ask questions, and get help from your classmates, your TAs, and your instructors, fast. We guarantee an average response time of 24 hours:

<http://piazza.com/tamu/summer2012/math151510805/home>

5. **Help Sessions:** Help sessions are an opportunity for you to ask questions and get help with your homework. Students that have previously taken math 151 lead the help sessions. The dates and times will be announced in class and will be linked on my webpage.
6. **Practice:** In order to succeed in this class, it is essential that you work the suggested homework problems (attached), re-work the problems done in lecture, and work the week-in-review problem sets.

## SUGGESTED SCHEDULE

- **Week 1**

*Appendix D, Section 1.1.* Review of trigonometry, two-dimensional vectors.

- **Week 2**

*Sections 1.2, 1.3, 2.2.* Dot product, vector functions, limit of a function.

- **Week 3**

*Sections 2.3, 2.5, 2.6.* Computation of limits, continuity, limit at infinity.

- **Week 4**

*Sections 2.7, 3.1, 3.2.* Velocity, derivatives

- **Week 5**

*Sections 3.3, 3.4, Exam I.* Applications of derivatives to applied problems, differentiation of trigonometric functions.

- **Week 6**

*Sections 3.5, 3.6, 3.7.* Chain rule, Implicit differentiation, derivatives of vector-valued functions.

- **Week 7**

*Sections 3.8, 3.9, 3.10.* Higher derivatives, tangent to parametric curves, related rates.

- **Week 8**

*Sections 3.11, 4.1, 4.2.* Differentials and approximation, exponential functions and inverse functions.

- **Week 9**

*Sections 4.3, 4.4, Exam II.* Logarithmic function, derivatives of logarithms.

- **Week 10**

*Sections 4.5, 4.6, 4.8.* Exponential growth and decay, Inverse trigonometric functions, Intermediate forms and L'Hospital's Rule.

- **Week 11**

*Sections 5.1, 5.2, 5.3.* Application of derivatives to graphing functions, extrema, concavity.

- **Week 12**

*Sections 5.5, 5.7, 6.1.* Applied maximum and minimum problems, Sigma notation.

- **Week 13**

*Section 6.2* Area.

- **Week 14**

*Sections 6.3, 6.4. Exam III* Definite integral, Fundamental Theorem of Calculus.

- **Week 15**

Review for final.

### SUGGESTED HOMEWORK

- **Exam 1 Material**

- *Section 0.1*: # 1, 3, 9, 11, 15, 17, 25, 36, 61, 63, 67, 71, 83, 87, 89, 91, 99, 101

- *Section 0.2*: # 3, 4, 7, 9, 17, 23

- *Appendix D*: # 1, 4, 9, 19, 23, 25, 27, 29, 33, 46, 55, 63, 67, 69, 77

- *Section 1.1*: # 3, 5, 9, 13, 17, 19, 21, 25, 27, 29

- *Section 1.2*: # 1, 5, 7, 13, 15, 17, 21, 25, 31, 35, 37, 41, 43, 51, 53, 55

- *Section 1.3*: # 1, 3, 7, 11, 15, 19, 25, 27, 29, 31, 34

- *Section 2.1*: # 1, 3, 5, 11

- *Section 2.2*: # 3, 5, 7, 13, 17, 21

- *Section 2.3*: # 3, 5, 6, 7, 13, 19, 23, 27, 39, 41, 45, 55, 67, 71

- *Section 2.5*: # 1, 3, 9, 15, 17, 23, 29, 33, 37, 39, 43, 47

- *Section 2.6*: # 3, 11, 17, 27, 29, 35, 45, 47

- *Section 2.7*: # 1, 3, 5, 9, 11, 15, 17, 21, 23

- *Section 3.1*: # 1, 5, 7, 13, 15, 23, 33, 34, 37, 39, 41, 47, 51, 53

- *Section 3.2*: # 3, 7, 9, 15, 19, 23, 29, 37, 39, 43, 50, 53, 55, 61, 70, 72 and (if antiderivatives covered) Pg. 353 # 1, 3, 5, 9

- **Exam 2 Material**

- *Section 3.3*: # 3, 7, 9, 11, 13, 17, 23

- *Section 3.4*: # 5, 7, 11, 15, 19, 21, 23, 27, 31, 33, 45 and (if antiderivatives covered) Pg. 353 # 11, 13

- *Section 3.5*: # 3, 7, 11, 13, 27, 33, 49, 51, 57, 59, 79, 80

- *Section 3.6*: # 1, 5, 11, 13, 21, 25, 27, 33, 35, 39, 45

- *Section 3.7*: # 3, 5, 11, 13, 17, 21

- *Section 3.8*: # 1, 2, 5, 11, 17, 31, 35, 43, 46, 49, 51
- *Section 3.9*: # 3, 5, 7, 9, 13, 17, 21
- *Section 3.10*: # 5, 7, 9, 11, 15, 17, 19, 23, 27, 31, 33
- *Section 3.11*: # 3, 9, 10, 14, 23, 27, 35, 36, 38, 39, 41, 45
- *Section 4.1*: # 3, 6, 7, 10, 17, 21, 25, 27, 29, 31, 35, 43, 47, 49, 59
- *Section 4.2*: # 3, 5, 7, 11, 13, 15, 19, 23, 25, 31, 35

- **Exam 3 Material**

- *Section 4.3*: # 3, 7, 11, 19, 21, 25, 29, 39, 43, 45, 51, 61, 70, 73, 79, 87
- *Section 4.4*: # 3, 7, 9, 13, 19, 27, 35, 39, 51, 59
- *Section 4.5*: # 3, 5a), 9, 11, 13, 15, 19, 21
- *Section 4.6*: # 3, 9, 17, 23, 27, 31, 35, 45, 51, 53, 65, 66
- *Section 4.8*: # 3, 9, 13, 17, 19, 25, 39, 41, 47, 55, 57, 61, 65
- *Section 5.1*: # 1, 3, 5, 11, 13, 17, 19, 21
- *Section 5.2*: # 3, 7, 11, 17, 19, 25, 27, 31, 37, 39, 41, 43, 45
- *Section 5.3*: # 1, 5, 7, 9, 13, 17, 19, 21, 35, 43, 45
- *Section 5.5*: # 1, 5, 7, 9, 13, 17, 19, 23, 27, 29, 31, 33, 39
- *Section 5.7*: # 3, 7, 9, 15, 17, 21, 23, 27, 31, 37, 39, 41, 43, 45, 49, 59, 61, 65, 71, 73, 79
- *Section 6.1*: # 5, 9, 19, 25, 41b), 43 Note: It is not necessary to memorize the summation formulas
- *Section 6.2*: # 1, 5, 13, 15 (at least be able to set up the the Riemann sum for 13 and 15), 23
- *Section 6.3*: # 7, 11, 17, 33, 35, 45, 47, 53, 55

- **Additional Material for Final Exam**

- *Section 6.4*: # 1, 3, 7, 9, 11, 19, 23, 27, 31, 41, 47, 51, 57, 73, 77, 79, 83, 93, 95