Course Information
Math 3351–002
CRN 26058
Fall 2016

September 1, 2016

Instructor: Prof. Lance D. Drager. Office: Math 236. Office Phone: (806)834-8161 If you let the office phone ring long enough, you’ll get me or a voice mail system you can leave a message on. My e-mail address is lance.drager@ttu.edu.

Course materials will sometimes be posted on my web page, which is http://www.math.ttu.edu/~drager.

Announcements and Class Forum: This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. You can post a question anonymously, if you want. If you have any problems or feedback for the developers, email team@piazza.com.

Sign up for our site at piazza.com/ttu/fall2016/math3351
Find our class page at: piazza.com/ttu/fall2016/math3351/home
I will check this site at least once each business day.

I will also post class announcements (including assignments) on Piazza, so check it to see what is happening.

If your message is not of general interest to the class, or you want to keep it private, send it to me privately or use my regular email (email address above).

There is a formula editor for generating and posting mathematical formulas in \LaTeX. This is the standard system for doing math on computers in science and engineering, so it’s worth learning about it. The Piazza help has a link to a tutorial, and there are many resources for \LaTeX on the web (we only need to look at how to do formulas, not how to do a whole document).

Alternatively, you can use the equation editor in Piazza, and if you search for online equation editors on the web, you’ll find WYSIWYG editors with a mouse/menu interface that produce the \LaTeX code for the formula, which you can then cut and paste into Piazza (put it between double dollar signs: $$ ... $$). Some of these editors also produce PNG or GIF files you can paste into
email, if you need to do that. (If you use Thunderbird, look for \LaTeX\ plugins.)
I can’t really tell you which editor is the best. This is a topic the class may
want to discuss.

**Office Hours**: MWF 10:00–11:30, TTh 2:00–4:00. You can come by outside
of formal office hours; I’ll usually have time to talk to you. Please feel free to
come by if you need help.

**Other Sources of Help**: The Mathematics Department Office has a list
of people who offer tutoring for pay. Forming informal study groups with other
students can be very helpful.

**Text**: The text is Dennis G. Zill and Warren S Wright, *Advanced Engi-

**Learning Outcomes**: Student Learning Outcomes: (3351) The students
will extend their knowledge of differential equations and their solutions acquired
in MATH 3350 by developing new methods to solve differential equations and
by studying the concept of partial differential equations and their solutions and
applications. In particular, the students learn:

- about the fundamental properties of linear systems, and their solutions
- how to solve partial differential equations by separation of variable or
  Fourier series
- to apply these techniques to the three classical equations: the heat, wave,
  and Laplace equation
- many examples of Boundary Value Problems that appear in physical sci-
  ences and engineering

**Calculator**: A symbolic calculator like the TI-89 or TI Voyage 200 is very
useful.

**Assessment of Learning Outcomes**: The assessment of student’s mas-
tery of the skills and concepts as specified in the expected learning outcomes
will occur, with appropriate course grades assigned, as follows:

1. 3 exams.
2. The final exam.
4. Homework.

Some of the homework will be done using the Wework online system.
The in-class exams, takehome, and the final exam will all be equally weighted.
I will drop the lowest of these four scores (which could be the score on the final).
If you are satisfied with your grades on the three in-class exams, you can skip
the final and let that be the dropped exam grade.
The exams will count for 60% of the final grade. The homework will count for 30% of the final grade and exam corrections will count for 10% of the final grade.

For each exam, I will determine a grade range for the A’s, B’s, C’s, D’s and F’s. I will then linearly resale the grades in the A range to the interval [90, 100], the grades in the B range will be rescaled to the interval [80, 89], and so forth.

At the end of the course, I will average the grades and assign letter grades with cutoffs 90% for A, 80% for B, 70% for C and 60% for D; I might lower these a little, but not much. Thus, with this system, you can determine your standing at any time.

For example, consider a hypothetical exam with the raw scores as in Table 1. The grade ranges might hypothetically be chosen as indicated. The numerical scores would then be rescaled as indicated in the table, using the formulas on the right and then rounding to the nearest point. The grade rescaling function would be as graphed in Figure 1.

**Course Schedule:**

Aug. 29–Sept. 16  Chapter 8, Matrices

Sept. 19  Exam 1.

Sept. 21–Sept. 30  Chapter 10, Systems of Linear Differential Equations.

Oct. 3–Oct. 14  Chapter 12, Orthogonal Functions and Fourier Series

Oct. 17  Exam 2

Oct. 19–Nov. 11  Chapter 13, Boundary-Value Problems in Rectangular Coordinates

Nov. 14  Exam 3

Nov. 16–Nov. 30  Chapter 14, Boundary-Value Problems in other Coordinate Systems

Dec. 3–Dec. 7  Integral Transform Method

Dec. 12  Final Exam, 7:30am–10:00am

The schedule is subject to change. Changes will be discussed in class and posted on the calendar on my website, but this document will not be changed.

**Final Exam:** The final exam is on Monday, Dec. 12, from 7:30am to 10:00am. It will be given in our usual classroom.

**Makeups:** If you miss an exam you can, at your option, take that as the exam score to be dropped. If you are absent from an exam and convince me that your reason was legitimate, I will give a makeup exam. Late homework will only be accepted with a serious, legitimate excuse.

**Homework on the Web:** Some of the homework will be done on the world wide web using the Webwork system. There will be link to the homework site on my homepage. Your username is your eraider name. The initial password is your Id number (starts with R). Change the password after you log in.
**Class Attendance:** To begin with, I will not count attendance towards the grade, although I may pass out a sign up sheet to check the class roll. Many studies show that class attendance is important in getting a good grade. I will institute an attendance system if it seems necessary!

Remember, you are responsible for all material covered in class and all announcements made in class. If you have to miss a class, you should check with me or a classmate to see what happened.

**Formative Assessment:** Continuous formative assessment of the progress of the course will occur via ongoing communication between the instructor and the students. To this end, all students are encouraged to ask questions during class and to seek the instructor’s help out of class when needed. Other activities in support of student-instructor communication will include: practice exams and quizzes, review of homework, and personal interviews with students doing poorly on work assigned at the beginning of the course.

**Identification:** You should be prepared to show your Texas Tech picture ID at any quiz or exam.

**Accommodation for Students with Disabilities:** Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructors office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405. [https://www.depts.ttu.edu/opmanual/OP34.22.pdf](https://www.depts.ttu.edu/opmanual/OP34.22.pdf)

**Academic Integrity:** It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

Scholastic dishonesty includes, but it not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act. [http://www.depts.ttu.edu/opmanual/OP34.12.pdf](http://www.depts.ttu.edu/opmanual/OP34.12.pdf)

**Observance of Religious Holy Days:** "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code 11.20. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused may not be penalized for the absence; however, the
instructor may respond appropriately if the student fails to complete the assignment satisfactorily. [https://www.depts.ttu.edu/opmanual/OP34.19.pdf](https://www.depts.ttu.edu/opmanual/OP34.19.pdf)

**Civility in the Classroom**: Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to assure that all students have the opportunity to gain from time spent in class, unless otherwise approved by the instructor, students are prohibited from engaging in any other form of distraction. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class. For more information, see [http://www.depts.ttu.edu/officialpublications/catalog/_AcademicsRegulations.php](http://www.depts.ttu.edu/officialpublications/catalog/_AcademicsRegulations.php)

**Concealed Carry of Handguns on Campus**: Please review [http://www.depts.ttu.edu/opmanual/op10.22.pdf](http://www.depts.ttu.edu/opmanual/op10.22.pdf)

![Graph of the grade rescaling function](image.png)

Figure 1: Graph of the grade rescaling function
<table>
<thead>
<tr>
<th>Raw (x)</th>
<th>Rescaled (y)</th>
<th>( y )</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
<td>96</td>
<td>( \frac{100 - 90}{100 - 86} (x - 86) + 90 )</td>
</tr>
<tr>
<td>92</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>90</td>
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<tr>
<td>83</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>85</td>
<td>( \frac{90 - 80}{86 - 78} (x - 78) + 80 )</td>
</tr>
<tr>
<td>78</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>74</td>
<td>( \frac{80 - 70}{78 - 70} (x - 70) + 70 )</td>
</tr>
<tr>
<td>72</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>(cut off at 70)</td>
<td></td>
<td></td>
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<tr>
<td>66</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>64</td>
<td>( \frac{70 - 60}{70 - 55} (x - 55) + 60 )</td>
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<tr>
<td>58</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>60</td>
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<tr>
<td>48</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>451</td>
<td>( \frac{60}{55} x )</td>
</tr>
<tr>
<td>40</td>
<td>44</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Example of grade rescaling