Differential Equations and Linear Algebra
Tentative Due Dates and Lectures Spring 2013
2250-1 7:30am in JTB 140

Midterm 1 [14 Feb, 21 Feb]   Av1= ☐

Midterm 2 [21 Mar, 28 Mar]   Av2= ☐

Midterm 3 [11 Apr, 18 Apr]   Av3= ☐

Final Exam [29 Apr]   AvFin= ☐

Average of 160 dailies including maple labs: AvDaily= ☐

Final Grade: $\dfrac{70}{100}\left(\dfrac{\text{Av1+Av2+Av3+AvFin+AvFin}}{5}\right) + \dfrac{30}{100}\text{AvDaily=}$ ☐

Questions: 801-581-6879, Office: 113 JWB. Email **ggustaf@math.utah.edu**


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Week 1, Jan 7 to 11. Lecture 1.1, 1.2, 1.3, 1.4.
09 Jan, Submit Page 16, 1.2-2 for quick review.

 Week 2, Jan 14 to 18. Lecture 1.5, 2.1, 2.2, 2.3
Homework package week 2, 6 problems
18 Jan, Page 17, 1.2:  2, 4, 6, 10
18 Jan, Page 27, 1.3:  8, 14

 Week 3, Jan 21 to 25. Lecture 2.4, 2.5, 2.6.
Homework package week 3, 10 problems
25 Jan, Page 43, 1.4:  6, 12, 18, 22, 26
25 Jan, Page 56, 1.5: 8, 10, 18, 20, 34

 Week 4, Jan 28 to Feb 1. Lecture 3.1, 3.2, 3.3.
Homework package week 4, 7 problems
01 Feb, Page 87, 2.1:  8, 16
01 Feb, Page 98, 2.2:   10, 18
01 Feb, Page 108, 2.3:  10, 20, 22
01 Feb, Submit Maple lab 1, intro to maple.

 Week 5, Feb 4 to 8. Lecture 3.4, 3.5, 3.6.
04 Feb, Submit Exam Review problems ER-1, ER-2 [use website PDF]
04 Feb, Submit maple L2.1 copy for quick feedback [not graded].
Homework package week 5, 10 problems
08 Feb, Page 155, 3.1: 8, 12, 16, 26
08 Feb, Page 165, 3.2: 10, 14, 24
08 Feb, Page 174, 3.3: 10, 20, 34

 Week 6, Feb 11 to 15. Lecture 4.1, 4.2, 4.3, 4.4.
14 Feb, Midterm 1, Part 1, Three of Five problems ch1 and ch2
Homework package week 6, 7 problems
15 Feb, Page 186, 3.4: 22, 30, 36, 40
15 Feb, Page 199, 3.5: 14, 26, 44 or Xc3.5-44a
15 Feb, Submit maple lab 2, Newton cooling.

 Week 7, Feb 18 to 22. Lecture 4.4, 4.5, 4.6, 4.7.
21 Feb, Midterm 1, Part 2, Last Two of Five problems ch1 and ch2
Homework package week 7, 12 problems
22 Feb, Page 216, 3.6: 6, 20, 30, 40, 60
22 Feb, Page 237, 4.1: 18, 20, 32
22 Feb, Page 244, 4.2: 4, 6, 18, 28

 Week 8, Feb 25 to Mar 1. Lecture 5.1, 5.2, 5.3, 5.4.
Homework package week 8, 6 problems
01 Mar, Page 252, 4.3: 18, 24, 34
01 Mar, Page 259, 4.4: 6, 12, 24
01 Mar, Submit numerical maple L3: L3.1, L3.2, L3.3
01 Mar, Submit numerical maple L4: L4.1, L4.2, L4.3
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 Week 9, Mar 4 to 8. Lecture 10.1, 10.2, 10.3, 10.4
Homework package week 9, 8 problems
06 Mar, Page 268, 4.5:  6, 24, 28
06 Mar, Page 276, 4.6:  2
06 Mar, Page 284, 4.7:  10, 12, 22, 26


 Week 10, Mar 18 to 22. Lecture 10.5, EPbvp7.6, 5.5
21 Mar, Midterm 2, First Three of Five problems ch3, ch4, ch5.1-5.3
Homework package week 10, 16 problems
22 Mar, Page 299, 5.1: 34, 36, 38, 40, 42, 46, 48 [done in 20 min]
22 Mar, Page 311, 5.2: 18, 22
22 Mar, Page 323, 5.3: 8, 10, 16, 32, 40
22 Mar, Page 335, 5.4: 20, 34 [see online FAQ]
22 Mar, Submit linear algebra maple lab 5, linear algebra.


 Week 11, Mar 25 to 29. Lecture 5.6, EPbvp3.7, 6.1, 6.2
28 Mar, Midterm 2, Last Two of Five problems ch3, ch4, ch5.1-5.3
Homework package week 11, 16 problems
29 Mar, Page 585, 10.1: 18, 22, 28
29 Mar, Page 598, 10.2: 10, 16, 20, 24
29 Mar, Page 608, 10.3: 6, 12, 18, 28
29 Mar, Page 617, 10.4: 22
29 Mar, Page 625, 10.5: 4, 14, 22, 28


 Week 12, Apr 1 to 5. Lecture 7.1, 7.2, 7.3, 7.4.
Homework package week 12, 12 problems
05 Apr, Page 351, 5.5: 54, 58, 6, 12, 22
05 Apr, Page 362, 5.6: 4, 8, 18
05 Apr, Page 510 in EPbvp 7.6: 8, 22
05 Apr, Page 227 in EPbvp 3.7: 4, 12


 Week 13, Apr 8 to 12. Lecture 7.4, 7.5 /w Laplace, 8.1, 8.2.
08 Apr, All Semester extra credit chapters 1,2,3,4,5 due.
09 Apr, Submit differential equations maple lab6: L6.1, L6.2, L6.3
11 Apr, Midterm 3, First two of Five problems ch5, ch10, ch6
        This is Laplace theory. Prepare from the S2012 exam.
Homework package week 13, 8 problems
12 Apr, Page 374, 6.1: 12, 20, 32, 36
12 Apr, Page 379, 6.2:  6, 20, 26, 28


 Week 14, Apr 15 to 19. Lecture 9.1, 9.2, 9.3.
18 Apr, Midterm 3, Last Three of Five problems ch5, ch10, ch6
Homework package week 14, 9 problems
19 Apr, Page 404, 7.1: 8, 20 (skip graphics)
19 Apr, Page 417, 7.2: 12, 14
19 Apr, Page 429, 7.3: 8, 20, 30
19 Apr, Page 438, 7.4: 6, 24
19 Apr, Submit maple lab 7, Laplace.


 Week 15, Apr 22,23,24. Lecture 9.4, Final Exam Review.
Homework package week 15, 14 problems
24 Apr, Page 492, 8.1: 4, 12, 38
24 Apr, Page 502, 8.2: 4, 19
24 Apr, Page 527, 9.1: 4, 8, 18
24 Apr, Page 541, 9.2: 2, 12, 22
24 Apr, Page 554, 9.3: 8, 9, 10
The problems can be worked by your favorite method, chosen from
(1) Laplace, (2) Cayley-Hamilton-Ziebur, (3) Eigenanalysis,
(4) Matrix Exponential, (5) Chapter 1 methods. See the FAQ.
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Chapter 1 and 2 Review Problems [Do not submit].
  Page 17, 1.2: 29,35,41; Page 27, 1.3: 10,25,26,33;
  Page 43: 1.4-51,59; Page 56: 1.5-21,23,33,39;
  Page 78: 1, 2, 5, 6, 7, 10, 13, 15, 19, 20, 21,
  24, 25, 28. Solve one way: 31, 32, 36;
  Page 87: 2.1-4,22,32,37; Page 98: 2.2-7,8,15,17;
  Page 108: 9,19,24; Page 121: 2.4-5,17;
  Page 132: 2.5-5; Page 142: 2.6-5,29.

Chapter 3 and 4 Review Problems [Do not submit].
  Page 155: 3.1-7,9,17,27; Page 165: 3.2-9,15,21,25;
  Page 174: 3.3-11,19,35; Page 186: 3.4-11,13,21,33,35,39;
  Page 199: 3.5-17,25,33,43; Page 216: 3.6-5,11,17,29,37,51,53;
  Page 237: 4.1-23,27,33-36; Page 244: 4.2-3,7,11,17,21,27,29;
  Page 252: 4.3-11,17,25; Page 259: 4.4-5,21,31;
  Page 268: 4.5-9,15,19,23; Page 276: 4.6-3,5; Page 284: 7,11,19,25;

Chapter 5 and 10 Review Problems [Do not submit].
  Page 299, 5.1: 33,35,37,39,41,43,53; Page 311, 5.2: 19,23;
  Page 323, 5.3: 7,9,17,31,37; Page 335, 5.4: 11,17,19,33;
  Page 351, 5.5: 5,11,19,25,27,39,47,51,59; Page 362, 5.6: 3,9,15;
  Page 585, 10.1: 9,11,13,15,17,27,29,31,40;
  Page 598, 10.2: 7,9,15,17,19,21,23,35,37;
  page 608, 10.3: 3,5,7,9,11,13,15,17,21,29,31,35;
  Page 617, 10.4: 3,9,13,17,23,27,29,37;
  Page 625, 10.5: 3,9,13,21,25,27,29,33,37;
Supplements EPbvp Review Problems [Do not submit].
  7.6 and 3.7: Solve 4 more problems from each.

Chapter 6 and 7 Review Problems [Do not submit].
  Page 374, 6.1: 3,7,11,15,19,21,23,29,33,35,39;
  Page 383, 6.2: 5,7,9,13,15,19,23,25,27,29,31,33,37;
  Page 404, 7.1: 7,11,15,17,24,26; Page 417, 7.2: 3,7,13,23;
  Page 429, 7.3: 7,11,21,29,31,39,43,45,49;
  Page 442, 7.4: 3,9,13,17,21;

Chapter 8 and 9 Review Problems [Do not submit].
  Chapter 8: 8.1-3,11,35; 8.2-3,15,21;
  Chapter 9: 9.1-3,7,17; 9.2-5,7,9,13,17,19,23,29;
             9.3-7,8,11; 9.4-1,3,13;

25 Apr, Office hours and lectures finished.
  When counting submitted work, account for ER-1,2 [2], Maple [25],
  Homework Packages week 2-15 [140]. If you missed anything, then
  submit Extra Credit from the 02 May package below.

27 Apr, Saturday: Special Final Exam review, 2pm. Location TBA.

29 Apr, Final Exam at 7:30am until 10am in JTB 140
 See the online final exam study guide.
02 May, Semester Extra Credit due Thursday under the door 113JWB by 6pm.
   Page 570, 9.4: 4, 8
   Xcredit Ch6, Ch7, Ch8, Ch9, Ch10, Ch10X
   Xcredit maple 8,9,10.
 Please, deliver under the door 113jwb by 6pm. No extension, the last moment.
 Extra credit Ch1 to Ch5 finished on 08 April. Work not submitted by
 that deadline has no grader, and it won't be graded.
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Policies on Dailies and Exams

Policy on Dailies: The highest 160 dailies will be counted. The lowest 7 of the 167 dailies will be dropped. Any record with less than 60 dailies earns a grade of **E**, regardless of midterm and final exam scores. Deadlines set at web site `www.math.utah.edu/~gustafso/`. Work not in the stack sent to the assistant earns a grade of zero. Extra credit exercises can correct these zeros.

Policy on Exams: The final exam is doubled before determining the exam average, to count like two midterms. The effect can be imagined as five midterm scores, averaged to obtain the semester exam score average.

Policy on Rank-in-Class: The class ranking is determined only by the exams. Rank 1 is the best, determined by sorting on the exam average (mid1+mid2+mid3+final+final)/5. There is no influence on class standing from dailies.

Dailies and Letter Grade: The dailies affect only the final letter grade assigned. A grade of E is assigned for less than 60 dailies. Otherwise, dailies contribute 30% towards the letter grade. In extreme cases, the influence is $\pm$ one letter grade, e.g., $B-$ on exams changes from $C-$ to $A-$.

Grading Scale: The internally-used scale is uses GPA increments, which step $1/3$ from $0.0 = E$ to $4.0 = A$. Briefly, $A = 95$, $B = 82$, $C = 67$, $D = 52$. In detail:

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A  = 95-100, A- = 90-94, B+ = 85-89, B  = 80-84,
B- =  75-79, C+ = 70-74, C  = 65-69, C- = 60-64,
D+ =  55-59, D  = 50-54, D- = 45-49, E  = 0-44.
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