Math 2250-013: Diff Equ & Lin Algebra

Time and Place
lectures (2250-013): M,W,F 11:50-1:10, JTB 140
lab (2250-014): H 11:50-12:40, LCB 225
(2250-015): H 12:55-1:45, JWB 208

Instructor
Alexander Balk
JWB 304, balk@math.utah.edu, 801-581-7512
Office Hours: M,T 3-4, or by appointment

TA
Sheets, T. R.
LCB 317, sheets@math.utah.edu, 801-585-1635
Office Hours: ???

Text
Differential Equations and Linear Algebra 4th Edition
by C. Henry Edwards, David E. Penney, and David Calvis
Lectures cover most of Chapters 1, 2, 3, 4, 5, 10, 6, 7, 9 (in that order)

Grading Policy
The grade for the class will be based on
(1) Weekly Homework — 10%
(2) Weekly Lab — 15%
(3) Weekly Quizzes — 35% (1 lowest score will be dropped)
(4) One 65 min midterm — 15%
(5) Comprehensive final — 25%

The (approximate) scale for the total grade (%):
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)

Homework (HW) and Lab (L)
It is impossible to learn mathematics without doing work yourself.
Please solve HW and L problems even if solutions are available to you.
Besides the assigned problems, you might want to do similar problems.
HW and L assignments will be posted on Canvas.

Quizzes (Qz)
In addition to the usual HW and L, there will be homework in the form of quizzes.
Each quiz will be 20 min in the beginning of class usually each Wednesday.
We will discuss quiz questions in class. You will be given quiz questions to prepare at home.
The questions of the real, in-class, quiz will be slightly different.

Midterm (M) and Final (F)
The midterm/final problems will be similar to the ones inHWs, Labs, and Qzs.

Dates
Labor Day Mon., Sept. 2
Midterm Wed. Sept. 25; in class
Fall break Sun.-Sun. Oct. 6-13
Thanksgiving Thu.-Sun., Nov. 28 - Dec. 1
Classes end Thu. Dec. 5
Final Fri. Dec. 13, 10:30 - 12:30 am in the regular room (per university schedule)

You need to solve all test problems (in Qz, M, F) without books, notes, and electronics
(e.g. without lecture notes, your own notes, computer, cell phone, and calculator).

For any problem, just the correct answer (without derivation or explanation) hardly costs anything.

The first quiz is on the first Wednesday. The first HW is due the second Wednesday.
In this course you need to learn several specific skills and understand certain things (in order to be able to succeed in further classes):

**Absolute minimum (grade \( \leq \text{“C”} \))**

- How to solve *first-order separable* ODEs?
- How to solve *second-order linear* ODEs with constant coefficients?
- How to add, multiply, and divide matrices?
- What are *eigenvalues* and *eigenvectors*? How to calculate them? How to use them in order to solve linear ode systems?

For grade \( \leq \text{“B”} \), in addition to those above, you need to know

- What is Euler’s method for numerical solution of ODEs? Why do we need to improve it?
- What is Gaussian elimination?
- What are linear independent vectors and functions?
- How to find the general solution of a linear ODE (homogeneous and nonhomogeneous)?
- What is the Laplace transform? And how to apply it to solve ODEs?

For grade \( \leq \text{“A”} \), you need also to know

- Substitution methods to solve ODEs
- Gauss-Jordan elimination. Why do we need it?
- Vector space. Geometric meaning of a matrix, eigenvalue, and eigenvector. What is dimension?

**ADA:** The Americans with Disabilities Act requires that reasonable accommodations be provided to qualified individuals. If you need such accommodation, please provide the Center for Disability & Access with a prior notice.

The University of Utah is fully committed to policies of nondiscrimination and equal opportunity.

The University of Utah values the **safety** of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.