

MATH 309: Linear Algebra - Dr. Miller - Course Info SUMMARY - Spring 2018

Meeting Times/Place: MWF 12:00-12:50 in VSC Room 202

Course Description/Content: (The Department-approved Student Outcomes are attached also.)

- SRU Catalog: Vector spaces, linear transformations, matrices, and determinants with applications.
- This course often requires explanations or even pseudo-proofs and is very VERBALLY oriented.

Prerequisite: Math 230 - Calculus II Pre/Co-requisite: Math 231 - Calculus III

Text: *Linear Algebra and Its Applications* by Lay, Lay, and McDonald (FIFTH ed., blue cover)

Contact and Office Hours: Email: lyn.miller@sru.edu - Phone: 724-738-2878 - Office: Room VSC 200B

- My web page is granite.sru.edu/~lmiller . (No “www.” and no D2L except for exam grades)
- Assignments, other information will be posted regularly on the sub-page for our course (not D2L).
- Drop-in Office Hours: MWF 9:30-10:30, MW 3-4:30. I’m also available by appointment or “capture.”
- In person or email, **SEEK HELP EARLY AND OFTEN!**

Classroom environment: I write by hand on the board and use some software demos; take detailed notes.

- I CANNOT ALLOW FOOD/DRINKS in the classroom due to SRU-documented disability.
- See me if this restriction conflicts with your own documented accommodations.
- Don’t distract yourself with cell phone or computer use during class.

Grading: $A = 90 - 100\%$; $B = 80 - 89\%$; $C = 70 - 79\%$; $D = 60 - 69\%$; $F = 0 - 59\%$.

- Course total = 550 points: HW Score = 100 pts, Exams 1-3 = 100 pts each, Final = 150 pts
- Students with SRU-documented test or HW accommodations should notify me ASAP.

Homework/Projects: Worth 100 points (scaled): lowest 1-2 scores dropped at end of semester

- HW will be collected at least every Friday; some short problems may be due on other days too.
- The total of ALL parts graded each week will count as a single HW score (unscaled as 20 pts).
- This course is quite verbal, so write legibly and leave plenty of room for me to comment.
- **Make-up HW - NONE**, nor any late. Dropping your lowest score allows for travel, illness, etc.
- This is like earning “personal days” at work; everybody is allowed to miss, but choose wisely.
- Turning in HW early or via email when you’ll be absent is usually approved, but ask to be sure.
- You may collaborate, but **don’t COPY** from others, web, solution manuals, past semesters, etc.
- Inappropriate collaboration may result in a score of 0 for all involved, regardless of intent.
- Solutions (sometimes partial) will typically be posted outside my office door.
- To honor copyright and other laws, do NOT share solutions on social media or web sites.
- Weekly HW assignments often need technology - such as calculator or software use - within problems.
- Actual software PROJECTS may be assigned; each counts as a separate, 2nd HW score that week.

Mid-Term Exams: Worth 300 points total: 100 each for Exam #1, #2, #3, no collaboration

- Topics List will be provided in advance. Study thoroughly, based on that List.
- Answers without work do not earn full credit. When asked, justifications must be rigorous.
- Justifications/work are graded on correct MATH knowledge, notation, reasoning, and style.
- Make-up approval requires prior notification, and documentation. **The Final is your make-up.**
- Mid-term exam dates: February 24±2 class days, March 31±2 class days, April 27
- Certain software will be permitted - and often necessary - on exams.

Final Exam: cumulative, worth 150 points total, no collaboration

- You MUST take the Final at the scheduled time: Wednesday, May 9, 1:00-3:00 pm.
- Students with SRU-documented disabilities must submit exam paperwork one week in advance.

Attendance: A sign-in sheet circulates daily, but attendance does NOT count toward your grade.

- If you are absent, YOU must make arrangements to catch up for the next class.
- Get contact info for at least one classmate. If you're absent, get notes from them.
- (I lecture from a basic outline, so I don't *have* any written materials to xerox if you're absent.)
- Assignments and announcements are available via my web page granite.sru.edu/~lmiller.

Student Outcomes - Math 309: Linear Algebra
(SRU Department of Mathematics - Spring 2014 PDF version)

- 1. Students will demonstrate an understanding of, ability to work with and a facility in proving theorems about vector spaces over arbitrary fields. This includes the following topics:**
 - (a) Definitions and examples
 - (b) Subspaces
 - (c) Linear independence
 - (d) Basis and dimensions
 - (e) The row space and the column space of a matrix
- 2. Students will demonstrate an understanding of and ability to work with linear transformations. This includes the following topics:**
 - (a) Definition and examples
 - (b) Matrix representation of linear transformations
- 3. Students will demonstrate an understanding of and ability to work with orthogonality. This includes the following topics:**
 - (a) The scalar product in \mathbb{R}^n
 - (b) Inner product spaces (definition and examples)
 - (c) Orthonormal sets
 - (d) The Gram - Schmidt Orthogonalization Process
- 4. Students will demonstrate an understanding of and ability to work with eigenvalues and eigenvectors. This includes the following topics:**
 - (a) Eigenvalues and eigenvectors
 - (b) Diagonalization
 - (c) Hermitian matrices
 - (d) Schur's lemma
 - (e) Quadratic forms

Important University-wide policy statement on sexual violence, required on all course syllabi:

“Slippery Rock University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office for Civil Rights, the University requires faculty members to report incidents of sexual violence shared by students to the University’s Title IX Coordinator. The only exceptions to the faculty member’s reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University protection of minors policy. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: <http://www.sru.edu/offices/diversity-and-equal-opportunity/sexual-misconduct-and-victim-resources>.”