

**MAT 532 — APPLIED LINEAR ALGEBRA  
FALL 2012**

Instructor: Professor Graham Leuschke

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Lecture: TR 9:30–10:50, Carnegie 311

Office hours: MW 1:30–4:30, by appointment, and any time my door is open

Text: *Matrix Analysis and Applied Linear Algebra*, by Carl D. Meyer.

Published by SIAM, ISBN 978-0-898714-54-8

Text website: [MatrixAnalysis.com](http://MatrixAnalysis.com).

Course webpage: [leuschke.org/teaching/mat-532-fall-2012/](http://leuschke.org/teaching/mat-532-fall-2012/)

**Course Description:** This course is about applications of linear algebra. How much we can cover will depend to some extent on the backgrounds of the students, but the applications we cover should at least include: electrical circuits, curve fitting, LU factorizations, least squares and projections, orthogonality, QR factorizations, Fourier series, and discrete (fast) Fourier transform. Possible additional topics: singular value decomposition, Markov chains and the PageRank algorithm, error-correcting codes.

A certain amount of theory will be necessary beyond what is covered in MAT 331 or 485, but it will be in the service of the applications. Furthermore, we will pay attention to computational issues and practical limitations that would normally be ignored in a pure linear algebra course.

I expect to cover the first five chapters of the text, with some omissions. Hopefully much of chapters 1–3 can be reviewed quickly.

**Prerequisite:** MAT 331, MAT 485, or graduate standing.

**Grading:** I will use the following scheme to compute your grade:

Homework: 25%

Hour exams: 2@ 25% each

Final exam: 25%

**Homework:** Homework will generally be assigned and collected weekly. You are free to work with other people in the class, but should turn in your solutions in your own handwriting.

**Hour exams:** There will be two hour-long exams during the semester, given in lecture.

Exam 1: Thursday 11 October

Exam 2: Thursday 15 November

Any changes to this schedule will be announced in class and on the course webpage.

**Final exam:** Monday 10 December, 12:45pm–2:45pm (“exam period 3”). The final will be cumulative, with an emphasis on the last third of the course.

**Course web page:** From time to time, interesting or useful information will appear on [the course web page](#). You should make a habit of checking it regularly (and remind me if I forget to update it).

**Students with Disabilities:** If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), [disabilityservices.syr.edu](http://disabilityservices.syr.edu), located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations.

**Academic Integrity:** Syracuse University sets high standards for academic integrity. Those standards are supported and enforced by students, including those who serve as academic integrity hearing panel members and hearing officers. The presumptive sanction for a first offense is course failure, accompanied by the transcript notation “Violation of the Academic Integrity Policy”. The standard sanction for a first offense by graduate students is suspension or expulsion. Students should review the Office of Academic Integrity online resource “[Twenty Questions and Answers About the Syracuse University Academic Integrity Policy](#)” and confer with instructors about course-specific citation methods, permitted collaboration (if any), and rules for examinations. The Policy also governs the veracity of signatures on attendance sheets and other verification of participation in class activities. Additional guidance for students can be found in the Office of Academic Integrity resource: “[What does academic integrity mean?](#)”.

For more information, see [academicintegrity.syr.edu/academic-integrity-policy/](http://academicintegrity.syr.edu/academic-integrity-policy/).

**Religious Observances Policy:** Syracuse University’s religious observances policy, found at [http://supolicies.syr.edu/emp\\_ben/religious\\_observance.htm](http://supolicies.syr.edu/emp_ben/religious_observance.htm), recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice/Student Services/Enrollment/My Religious Observances from the first day of class until the end of the second week of class.