

**MATH 623: Linear Algebra and Matrix Theory**  
Fall 2014 M 4-5:15 EBA 340, W 4-5:15 GMCS 305

**Overview:**

This graduate course consists of advanced topics from linear algebra and matrix theory. Its primary content will be theoretical results and their proofs, however these will be motivated by applications.

**Learning Objectives:**

Students will carefully state all definitions and theorems relevant to the course, including all conditions and exceptions (if any). They will prove these theorems, as well as specializations and generalizations. They will apply the theorems and techniques to solve concrete problems.

**Textbook:**

*Matrix Analysis, 2nd ed.*, by Roger Horn and Charles Johnson, ISBN 978-0-521-54823-6  
Students are expected to own and read the text. It contains embedded exercises, as well as end-of-section problems (with hints in the back). Students are expected to work all of the exercises (apart from announced exceptions), and certain announced problems. Homework will not be collected, and will generally not be discussed in class due to time constraints – please bring homework questions to office hours, or ask via email.

Chapter 0, Chapter 1, Section 2.1, Chapter 3, Section 4.1, Chapter 5 (up to 5.6)

**Course Mechanics:**

We will cover material following the table below. Almost every class day will contain a brief quiz (sometimes more than one), on material from the preceding day or before. Quiz questions will often be similar to the embedded exercises. Some quizzes will be taken in groups, and some will be open-notes. They are meant to be easier than exam questions, and the lowest quiz score will be dropped in computing the quiz average.

Aug. 27	Ch.0	Sep. 22	1.3	Oct. 13	3.2	Nov. 3	Exam	Nov. 24	None
Sep. 3	Ch.0	Sep. 24	1.3	Oct. 15	3.2	Nov. 5	4.0,4.1	Dec. 1	5.6
Sep. 8	Ch.0	Sep. 29	1.4	Oct. 20	3.3	Nov. 10	5.0,5.1	Dec. 3	5.6
Sep. 10	Ch.0	Oct. 1	Exam	Oct. 22	3.4	Nov. 12	5.2	Dec. 8	5.6
Sep. 15	1.0,1.1	Oct. 6	2.0,2.1	Oct. 27	3.4	Nov. 17	5.3,5.4	Dec. 10	Review
Sep. 17	1.2	Oct. 8	3.0,3.1	Oct. 29	3.5	Nov. 19	5.5	Dec. 15	Final

FINAL EXAM: Monday December 15 3:30pm-5:30pm (in EBA 340)

**Attendance:**

Students are expected to attend every class. Makeup exams are not given under any circumstances, however see the grading policy below. Under extraordinary circumstances (e.g. hospitalization), an alternative grading policy may be used.

**Collaboration:**

Students are strongly encouraged to study together, and to work together to solve exercises. Exams and quizzes must be taken without assistance, unless explicitly told otherwise.

**Grading:**

The two midterms are open-book open-notes, while the final is closed-book closed-notes. All grades will be normalized to lie between 50% (blank but present) and 100% (perfect score). Missing grades will still be 0%. The grading policy is as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
92.0	90.0	88.0	82.0	80.0	78.0	72.0	70.0	68.0	62.0	0

The student course grades will be based on whichever of the following five regimes gives the highest outcome. This policy is in place to accomodate students for whom one of the measures does not accurately represent their abilities.

“Normal”		“Bad Quizzes”		“Bad Exam 1”		“Bad Exam 2”		“Bad Final”	
Quizzes	20%	Quizzes	0%	Quizzes	25%	Quizzes	25%	Quizzes	25%
Exam 1	20%	Exam 1	25%	Exam 1	0%	Exam 1	25%	Exam 1	25%
Exam 2	20%	Exam 2	25%	Exam 2	25%	Exam 1	0%	Exam 2	25%
Final	40%	Final	50%	Final	50%	Final	50%	Final	25%

**SDS:**

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from Student Disability Services. Your cooperation is appreciated.

**Professor:**

Vadim Ponomarenko

<http://www-rohan.sdsu.edu/~vadim/>

[vponomarenko@mail.sdsu.edu](mailto:vponomarenko@mail.sdsu.edu)

Office hours: GMCS 511, Mondays 9:00am-12:30pm, and by appt.