M346: Applied Linear Algebra, Spring 2010

Unique # 56995

Course Syllabus

This is an advanced undergraduate course on linear algebra. The emphasis of the course is on diagonalization of linear operators and its applications. Main topics include: vector spaces, linear transforms, spectral theory (both discrete and continuous), inner products and orthogonality, Hermitian and unitary operators, and Fourier transform.

**Prerequisite.** The prerequisite is M341 (or M311) or M340L, with a grade of C or better.

**Class Time and Location.** The class will meet T TH 9:30 AM - 11:00 AM @ RLM 7.116.

**Instructor.** Kui Ren
Office: RLM 10.170
Phone: 512-471-3152
Email: ren@math.utexas.edu
Office Hours: T TH 11:00AM-12:30PM + Appointments.

**Teaching Assistant.** Betul Orcan
Office: RLM 10.110
Phone: 512-475-9143
Email: borcan@math.utexas.edu

**Homework and Exams.** There will be twelve homework sets. The two lowest score from your homework will be dropped when calculating your final score. There will be two in-class exams and a final exam. Note that, in principle, no late homework will be accepted and no makeup exam will be arranged.

**Grading Policy.** The final grade will be weighted roughly as follows:

Homework 30%, Exam I 20%, Exam II 20%, Final Exam 30%.
The letter grades are distributed as follows:

- 90% - 100% : Grade A
- 80% - 89% : Grade B
- 70% - 79% : Grade C
- 60% - 69% : Grade D
- 0% - 59% : Grade F

**Course Webpage.** All the homeworks will be posted on the university teaching tool, the blackboard system:

https://courses.utexas.edu/webapps/portal/frameset.jsp

**Textbooks.**

*Applied Linear Algebra: the Decoupling Principle, 2nd edition (required)*
Lorenzo Sadun,
American Mathematical Society, 2008

**Computing Resources.** The mathematics undergraduate computer lab in RLM 7.122 is open to all students enrolled in a math course. The lab is open whenever the RLM building is open. You will need an account to use the lab. Bring your EID with you when you visit the lab to sign up for an account.

**Miscellaneous.**

- The University of Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-6441 TTY.

- It is the policy of The University of Texas at Austin that you must notify the instructor at least fourteen days prior to the classes scheduled on dates you will be absent to observe a religious holy day.
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Lecture Schedule

• 01/19 (TU): Logistics and Introduction
• 01/21 (TH): Sections 2.1-2.3;
• 01/26 (TU): Sections 2.4-2.5
• 01/28 (TH): Sections 3.1-3.2; \textit{HW#1 Handout}
• 02/02 (TU): Sections 3.3-3.4
• 02/04 (TH): Section 3.5; \textit{HW#2 Handout}
• 02/09 (TU): Sections 4.1-4.2
• 02/11 (TH): Sections 4.3-4.4; \textit{HW#3 Handout}
• 02/16 (TU): Sections 4.5-4.6
• 02/18 (TH): Sections 4.7-4.8; \textit{HW#4 Handout}
• 02/23 (TU): \textbf{Exam I}
• 02/25 (TH): Section 5.1; \textit{HW#5 Handout}
• 03/02 (TU): Section 5.2
• 03/04 (TH): Sections 5.3-5.4; \textit{HW#6 Handout}
• 03/09 (TU): Sections 6.1-6.3
• 03/11 (TH): Sections 6.4-6.5; \textit{HW#7 Handout}
• 03/16 (TU): Spring Break
• 03/18 (TH): Spring Break
• 03/23 (TU): Sections 6.6-6.7
• 03/25 (TH): Sections 6.8-6.9; \textit{HW#8 Handout}
• 03/30 (TU): Sections 7.1-7.2
• 04/01 (TH): Sections 7.3;  
   HW#9 Handout

• 04/06 (TU): Sections 7.4-7.5

• 04/08 (TH): **Exam II**

• 04/13 (TU): Section 9.1

• 04/15 (TH): Section 9.2;  
   HW#10 Handout

• 04/20 (TU): Section 9.3

• 04/22 (TH): Section 9.4;  
   HW#11 Handout

• 04/27 (TU): Section 10.1

• 04/29 (TH): Section 10.2;  
   HW#12 Handout

• 05/04 (TU): Section 10.3

• 05/06 (TH): Section 10.5

• 05/13 (TH): **Final Exam** Time: 9:00 AM - 12:00 Noon; Location: BUR 108

• 05/18 (TU): **Final Grade Available**

Note that there are probably minor changes on the schedule. Those changes will be announced in class.