INTRODUCTORY LINEAR ALGEBRA  (FALL 2019)

Course.  MATH 01:640:250 (TF 8:40-10:00 am, SEC 216)

Instructor.  Dr. P. H. Tiep

Contact information.
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Office hours.  Tuesday 2:30 – 3:20pm, Wednesday 11:00 – 11:50am, Friday 2:30 – 3:20pm. You
are also welcome to come to my office at any time if I am in and available.

Textbook.  ‘Elementary Linear Algebra: A Matrix Approach’ by Spence, Insel, and
Friedberg, Pearson Prentice Hall, 2nd edition.  After class, read your notes and the textbook
material thoroughly before attempting the assigned problems.

Description.  Systems of linear equations, Gaussian elimination, matrices and determinants,
vectors in two- and three-dimensional Euclidean space, vector spaces, introduction to eigenval-
ues and eigenvectors.  Possible additional topics: systems of linear inequalities and systems of
differential equations.

Prerequisites: CALC2 or 01:640:136 or 138.

Content.  Vectors in \( n \)-dimensional space, systems of linear equations, Gaussian elimination,
span and linear independence of a set of vectors, matrix algebra, determinants, subspaces of
\( n \)-dimensional space, basis and dimension, eigenvalues and eigenvectors, diagonalization of a
matrix, geometry of vectors, projections, orthogonal sets of vectors, symmetric matrices, and
applications.

Quizzes.  There will be (tentatively) 8 pop-quizzes, 10pts each.  Drop three worst for a total of
50pts.  No make-up for missed quizzes.

Homework.  Homework assignments (see my webpage) will be updated frequently.  Homework
(stapled) will be collected on the due date in class, and will be graded, with one part of credit
given for completeness and another part for selected problems.  Graded homework can be picked
up one week later in class at the end of class, or during my office hours.  Homework past the due
date is not accepted.

Exams (subject to change).  There will be two 50-point in-class (midterm) exams given
on Oct. 8 (Tuesday) and Nov. 12 (Tuesday).  The final exam is comprehensive and given on
Dec. 19 (Thursday), 8:00-11:00 am.  All the exams are given in the usual classroom.

The ONLY permissible reason for make-up exams is based on verifiable medical grounds or
religious holidays.  In the former case, written statements (accompanied by phone numbers) of
attending physicians, AND letters from the Dean of Students’ office, are required to prove genuine
medical emergencies.  In the latter case, the instructor must be informed at least two weeks ahead
of the exam date.
Grade.
Total: \(2 \times 50\) (for the midterms) +100 (for the final) +50 (for the homework) +50 (for the quizzes) = 300.

Important. Your written work should be neat. Show all your work. Answers with no work and/or no explanations will receive no credit. Please remember that the instructor is here to help you, so never afraid to ask for help.

Students are expected to attend every scheduled class and to be familiar with the University Class Attendance policy. It is the student’s responsibility to keep informed of any announcements, syllabus adjustments or policy changes made during scheduled classes.

Students are expected to behave in accordance with the Code of Academic Integrity, see http://academicintegrity.rutgers.edu/academic-integrity-policy

The university is fully committed to compliance with the Americans with Disabilities Act; policies and procedures are indicated at http://ods.rutgers.edu. Students who wish to request special accommodations must present a Letter of Accommodations to the instructor as early in the term as possible.

Student-Wellness Services.

- **Just In Case Web App** http://codu.co/cee05e
  Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

- **Counseling, ADAP & Psychiatric Services (CAPS)** (848) 932-7884
  17 Senior Street, New Brunswick, NJ 08901 / www.rhscaps.rutgers.edu/
  CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students’ efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

- **Violence Prevention & Victim Assistance (VPVA)** (848) 932-1181
  3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/
  The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

- **Disability Services** (848) 445-6800
  Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / https://ods.rutgers.edu/
  The Office of Disability Services works with students with a documented disability to determine the eligibility of reasonable accommodations, facilitates and coordinates those accommodations when applicable, and lastly engages with the Rutgers community at large to provide and connect students to appropriate resources.

- **Scarlet Listeners** (732) 247-5555 / http://www.scarletlisteners.com/
  Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.
Homework assignments (tentatively, with due dates; see my webpage for the most updated list. TF = true–false questions).

Sep. 10: §1.1: 1, 3, 5, 9, 17, 19, 23, 25, **TF:** 37-56, 71, 75, 79, 81, 82;
§1.2: 1, 3, 9, 15, 17, 19, 29, 31, 35, 37, 39, **TF:** 45-63, 67, 68, 75, 76, 77, 78;

Sep. 17: §1.3: 1, 3, 7, 9, 11, 23, 25, 39, 41, 43, 45, 47, 49, 51, 53, 55, **TF:** 57-76, 81;
§1.4: 1, 3, 5, 7, 11, 13, 17, 19, 23, 27, 35, 37, 43, **TF:** 53-72, 74-78, 81-84, 87-91;

Sep. 24: §1.6: 1, 3, 17, 19, 21, 23, 25, 27, 29, 31, 33, 39, 43, **TF:** 45-64, 70, 72;
§1.7: 1, 5, 13, 15, 23, 25, 29, 33, 39, 41, 51, 53, 57, **TF:** 63-82, 87, 89;

Oct. 1: §2.1: 5, 7, 9, 11, 13, 15, 17, 19, 22, 23, 25, 27, 29, 31, **TF:** 33-50;
§2.3: 1, 3, 9, 11, 13, 17, 19, 23, 25, 29, 31, **TF:** 33-52, 54, 59, 61, 67, 69, 71, 83;

Oct. 8: Midterm 1

Oct. 15: §2.4: 1, 3, 7, 9, 11, 13, **TF:** 35-54, 57, 59, 64;
§2.7: 1, 5, 7, 21, 23, 25, 27, 31, 33, **TF:** 35-54, 57, 61, 65, 69, 73, 75, 79, 99;

Oct. 22: §3.1: 1, 3, 9, 11, 13, 14, 15, 21, 23, 27, 29, 31, 37, 43, **TF:** 45-63;
§3.2: 5, 6, 7, 8, 11, 13, 17, 19, 21, 27, 33, **TF:** 39-58, 67, 69-75;

Oct. 29: §4.1: 3, 5, 9, 11, 13, 19, 21, 27, 29, 33, 39, **TF:** 43-51, 57-61, 67, 69, 81, 83, 85, 89, 93;

Nov. 5: §4.2: 1, 3, 5, 7, 17, 19, 21, 25, 27, **TF:** 33-50, 53, 54, 59, 63, 65;
§4.3: 1, 3, 5, 7, 9, 11, 15, 17, 19, 25, 27, **TF:** 41-57, 59-60, 63, 65, 69, 73-76, 83;

Nov. 12: Midterm 2

Nov. 19: §5.1: 1, 3, 7, 9, 13, 17, 23, **TF:** 41-44, 46, 50, 51, 55-60, 63, 64, 66, 67, 68, 69;
§5.2: 1, 5, 9, 11, 13, 15, 17, 19, 21, 41, **TF:** 53-72, 77, 79, 81, 85, 86;

Nov. 26: §5.3: 1, 3, 5, 7, 11, 15, 17, 19, **TF:** 29-48, 49, 51, 55, 57, 61, 63, 65, 73, 77, 81, 85;
§6.1: 3, 5, 7, 9, 11, 13, 15, 17, 25, 29, 33, 37, 49, 51, 53, **TF:** 61-80, 95, 97, 99;

Dec. 3: §6.2: 1, 3, 5, 7, 9, 13, 15, 17, 21, **TF:** 41-52, 53, 54;
§6.3: 1, 5, 9, 13, 17, 19, 21, **TF:** 33-56, 59, 65;

Dec. 10: §6.4: 1, 3, 5, 13, 16, 17, **TF:** 28-31;
§6.5: 3, 5, 7, **TF:** 17, 21-29, 42, 49.

TBA: Final Exam