



Course EE6350 Signal Theory
Professor Aria Nosratinia
Term Fall 2021
Meetings Mon. Wed. 2:30-3:45pm ECSN 2.112

Professor's Contact Information

Office Phone 972-883-2894
Other Phone
Office Location ECSN 4.504
Email Address aria@utdallas.edu
Office Hours MW 2:30-3:45pm
Other Information I don't read WebCT mail

General Course Information

Pre-requisites, Co-requisites, & other restrictions Undergraduate Linear Algebra

Course Description This course explores the fundamentals of signal representation and approximation, with an emphasis on minimum mean square theory and Hilbert space approximation.

Learning Outcomes

1. Ability to work with metric spaces and vector spaces
2. Ability to work with approximations in metric spaces
3. Ability to work with four fundamental subspaces and projections
4. Ability to work with eigenvalue decompositions
5. Ability to work with singular value decompositions
6. Ability to work with Hilbert spaces

Required Texts & Materials Moon and Stirling, "Mathematical methods and algorithms for signal processing," Prentice-Hall

Suggested Texts, Readings, & Materials Naylor and Sell, "Linear operator theory in engineering and science," Springer Verlag

Assignments & Academic Calendar

[Topics, Reading Assignments, Due Dates, Exam Dates]

Week 1 Background and review
Week 2-4 Metric and vector spaces, orthogonality principle
Week 5-9 Four fundamental subspaces, matrix inverses, min norm and least squares
Week 10-11 Eigenvalue decompositions
Week 12-13 Singular value decompositions
Week 14-15 Advanced topics, Hilbert spaces, generalized Fourier transforms

Insert Exam Date(s), Time(s) TBA,

Course Policies

Grading (credit) Criteria	Midterm 1 25%, Midterm 2 25%, Final exam 40% , Homework, Quizzes 10%
Make-up Exams	No makeup exams will be given. The credit for any missed exams (only with officially acceptable documentation) will roll over to the next exam or final project.
Extra Credit	N/A
Late Work	Homeworks are due at the beginning of class on the due date
Special Assignments	N/A
Class Attendance	Not required or recorded in Fall 2021 due to COVID
Classroom Citizenship	Reflected in the class participation credit (see above)
Field Trip Policies	N/A
Class Materials	The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct .
Classroom Conduct Requirements Related to Public Health Measures	UT Dallas will follow the public health and safety guidelines put forth by the Centers for Disease Control and Prevention (CDC), the Texas Department of State Health Services (DSHS), and local public health agencies that are in effect at that time during the Fall 2021 semester to the extent allowed by state governance. Texas Governor Greg Abbott's Executive Order GA-38 prohibits us from mandating vaccines and face coverings for UT Dallas employees, students, and members of the public on campus. However, we strongly encourage all Comets to get vaccinated and wear face coverings as recommended by the CDC. Check the Comets United: Latest Updates webpage for the latest guidance on the University's public health measures. Comets are expected to carry out Student Safety protocols in adherence to the Comet Commitment. Unvaccinated Comets will be expected to complete the Required Daily Health Screening. Those students who do not comply will be referred to the Office of Community Standards and Conduct for disciplinary action under the Student Code of Conduct – UTSP5003.
Student Conduct and Discipline	<p>The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, <i>A to Z Guide</i>, which is provided to all registered students each academic year.</p> <p>The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and</p>

	<p>described in the <i>Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3</i>, and in Title V, Rules on Student Services and Activities of the university's <i>Handbook of Operating Procedures</i>. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).</p> <p>A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.</p>
Academic Integrity	<p>The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.</p> <p>Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.</p> <p>Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.</p>
Email Use	<p>The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.</p>
Comet Creed	<p><i>This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:</i></p> <p><i>"As a Comet, I pledge honesty, integrity, and service in all that I do."</i></p>

These descriptions and timelines are subject to change at the discretion of the Professor.