

Signals and Systems

CSCE 3010, Section 001

Fall 2025

Class Timings: Monday and Wednesday, 7:00 PM – 8:20 PM, Discovery Park B192

Instructor: Fernando Mosquera, Email: Fernando.mosqueraferrandiz@unt.edu Student hours: E235H, Monday and Wednesday 10:00 AM – 12:00 PM or by appointment.

Teaching Assistants:

- Gopi Krishna Kuncham. Email: gopikrishnakuncham@my.unt.edu
Student hours: See at Canvas.

Course Webpage: All the course related material will be posted on the course webpage which is available through Canvas (<https://unt.instructure.com/>)

Course Description:

3 hours. Fourier Series, Fourier and Laplace transforms with emphasis on their physical interpretation. System representation by transfer functions and impulse response functions. Convolution integral. Transient response, discrete time signals and systems, sampling techniques, Z and discrete Fourier transforms. Use of software tools for analysis is integral to this course.

Course Outcomes:

- Understand the mathematical descriptions of continuous-time (CT) and discrete-time (DT) signals.
- Understand the characteristics and properties of real systems.
- Analyze signals and systems in both the time and frequency domain.
- Gain experience with CT and DT Fourier series.
- Apply the properties of the Fourier transform, Laplace transform and z-transform to real systems.

Textbook: *Signals and Systems: Analysis Using Transform Methods and MATLAB*, 2nd edition, M. J. Roberts, McGraw Hill, 2012, ISBN 978-0-07-338068-1.

Supplemental text: MATLAB Student Edition

Catalog Description:

Elementary concepts of continuous-time and discrete-time signals and systems. Specific topics include linear time-invariant (LTI) systems, impulse response, convolution, Fourier series, Fourier transforms, frequency-domain analysis of LTI systems, Laplace transforms, z-transforms and rational function descriptions of LTI systems.

Requirements: Students currently listed as pre-engineering majors are not allowed to take this course. Students must complete EENG 2610/2611 and either MATH 2730 or MATH 3410 before enrolling in this class.

Grading:

Attendance	10%
Homework	15%
Project	15%
Midterm Exam	25%
Final Exam	35%

Homework: Homework will be in the form of problem sets with a due date **one week** after it is assigned.. **No late homework will be accepted.** Homework must be done individually (you will learn the most from this). Any evidence of group participation or direct copying from sources like previous year's solutions, textbook, solutions, Wikipedia, websites, and other sources will be interpreted as academic dishonesty. Using AI (Artificial Intelligence) assisted websites to generate or auto generate solutions will also be interpreted as academic dishonesty.

Quizzes: There will be six to seven pop quizzes given throughout the semester. The pop quizzes can be given any time during the class. These will be to reward students who consistently attend the class but will be more than just attendance points. Please make sure you have a simple calculator (not a programmable calculator) to take the quizzes. The solution for quizzes will be posted on Canvas.

Exams: There will be a midterm exam and a final exam. The exams are closed books and closed internet. Mobiles phones are not permitted and browsing the internet is not allowed. Please make sure you have a simple calculator (not a programmable calculator) to take the exams. Exams will include material from the modules, the readings, homework, and labs and should be taken individually and not as a team.

- **Midterm Exam:** Monday, October 13th, 2025, 7:00 PM – 8:20 PM, NTDP B192
- **Final Exam:** Monday, December 8th, 2025, 6:30 PM – 8:30 PM. NTDP B192

Missing Classes, Assignments, or Exams: Attendance at all exams and lectures is mandatory. Throughout the semester, a student may miss classes or exams due to many reasons. Most of the reasons will not be accepted as an "excused" absence. Assignments or exams can be made-up only under extraordinary circumstances and only when notification is given to me before the assessment or exam is administered. A no-show for an assessment or exam without prior notification and a verifiable excuse (appropriate official documentation) will result in a grade of zero (0) for that assessment or exam.

COVID-19 Impact on Attendance: Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.

If you are experiencing any [symptoms of COVID-19](#) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Team at COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure.

Disputing Grades: If you have a dispute about how an assignment or exam is graded, you should get the solution to the assignment or exam off the course web site and examine it. If you really believe that your answer is correct (matches the answer given in the solution), contact the grader and discuss it with him. The grader will listen to your concern, and act on it, at their discretion. In any case, they will re-grade the assignment and will communicate with you. Note that instructor or grader addition errors should follow the above procedure. Assignment, exam, and homework grades are disputable for **one week** from the day the grades were posted on Canvas.

Syllabus Revisions: This syllabus may be modified as the course progresses. Notice of such changes will be by email or announcement in class.

Class Policies: Please note that portable phones, pagers, and late arrivals are disruptive to the instructor and to your peers. The use of cell phones, beepers, or communication devices is disruptive and is therefore absolutely prohibited during class and exams. Turn off your cell phone while in class and while taking exams. If I catch you using these devices in class or during the exams, the penalty can range from a formal warning to an 'F' for the course and you will be asked to leave the class. Except in emergencies, students using such devices must leave the classroom for the remainder of the class period. I know that some of you may wish to take notes directly on your computer and I have no problem with that. If, however, you choose to access your email, search the web, play games, or instant messenger your friends during class, you will have 5% deducted from your final grade for each transgression. If I am late arriving to the class, it will be because of circumstances beyond my control. You are expected to remain 20 minutes after the scheduled class start time while I attempt to communicate my situation and relay instructions.

Course Policies: You are expected to spend at least 12.5 hours per week on this course. Keep all your graded assignments, quizzes, and tests for study and review. You should track your own progress using Canvas and be aware of current grades throughout the term. Graded midterm exam, quizzes, and class activities will be returned after you take the final exam. If you would like to look at the graded assignments, meet me during my student hours or set up an appointment. Final grading will be done as follows. **A:** $\geq 90\%$, **B:** $\geq 80\%$ and $< 90\%$, **C:** $\geq 70\%$ and $< 80\%$, **D:** $\geq 60\%$ and $< 70\%$ and **F:** $< 60\%$. Grades will be curved if necessary. Grades cannot be changed after they have been electronically entered into university's system except for instructor errors. Any extenuating circumstances that may adversely affect your grade must be brought to my attention before the final course grades are recorded. To be considered, such circumstances must be unusual, unavoidable, and verifiable.

Disability Services/Special Needs: UNT complies with all federal and state laws and regulations regarding discrimination including the Americans with Disability Act of 1990 (ADA). If you have a disability and need reasonable accommodation for equal access to education or services, please contact the Office of Disability Accommodation. Please initiate this process and inform me during the first two weeks of class.

Academic Dishonesty: All the provisions of the University code of academic integrity apply to this course. In addition, it is my understanding and expectation that your signature on any test or assignment means that you neither gave nor received unauthorized aid. For homework and labs, while discussion is allowed, direct copying is not, and students must turn in individual submissions. Using AI (Artificial Intelligence) assisted websites to generate or auto generate solutions will also be interpreted as academic dishonesty. All students are required to know, observe, and help enforce the UNT Code of Student Academic Integrity. Academic dishonesty will result in disciplinary action according to UNT Policy 06.003. The penalty for a first offense can range from a formal warning to an 'F' for the course. Regardless of the penalty imposed, a record of the offense will be kept in the Office of the Dean of Students.

All department policies on Academic Integrity and Student Conduct apply for this course these are available at the following

link: <https://engineering.unt.edu/cse/students/resources/academic-integrity.html>

Any exceptions to these guidelines are noted explicitly in the syllabus

Student Perceptions of Teaching (SPOT): Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The short SPOT survey will be made available during the last week of classes to provide you with an opportunity to evaluate how this course is taught.

ABET Survey: Towards the end of the course, the students will be asked to do an ABET exit survey which will help instructors to quantitatively measure whether the students met the course outcomes stated in the course syllabus. This survey will be conducted during the last week of classes.

Tentative Course Schedule (*subject to change*):

	Week	Lecture	Remarks
1	8/18 - 8/20	Syllabus [CH1] Introduction	
2	8/25 - 8/27	[CH2] Mathematical Description of Continuous-Time Signals	
3	9/1 - 9/3	Labor Day - No Classes - University Closed [CH3] Discrete-Time Signal Description	Homework CH2 Project CH2
4	9/8 - 9/10	[CH3] Discrete-Time Signal Description (Cont.) [CH4] Description of Systems	Homework CH3
5	9/15 - 9/17	[CH4] Description of Systems (Cont.)	Project CH3
6	9/22 - 9/24	[CH5] Time-Domain System Analysis	Homework CH4
7	9/29 - 10/1	[CH5] Time-Domain System Analysis (Cont.)	Homework CH5
8	10/6 - 10/8	Exam Review	Project CH5
9	10/13 - 10/15	Midterm Exam, [CH6] Continuous-Time Fourier Methods	Midterm Exam
10	10/20 - 10/22	[CH6] Continuous-Time Fourier Methods (Cont.)	
11	10/27 - 10/29	[CH7] Discrete-Time Fourier Methods	Homework CH6
12	11/3 - 11/5	[CH8] The Laplace Transform	Project CH6
13	11/10 - 11/12	[CH9] The z-Transform	Homework CH8
14	11/17 - 11/19	[CH9] The z-Transform (Cont.)	
15	11/24 - 11/26	Thanksgiving Break - No classes	No Classes
16	12/1 - 12/3	Exam Review	Homework CH9
17	12/8/2025	6:30 PM to 8:30 PM in NTDP B192	Final Exam