

CENG 4331 COURSE SYLLABUS

COURSE: CENG 4331-01 Analysis and Design of Linear Systems

COMPUTER NO.: 23499

SEMESTER: Fall 2015

LOCATION: UH-Clear Lake, D237

MEETING TIME: Monday-Wednesday 5:30-6:50 pm

INSTRUCTOR: Harman, Thomas L.

MESSAGES: Phone Mail: 281-283-3774
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Faculty Suite Secretary: 281-283-3850

OFFICE HOURS OF INSTRUCTOR: Monday 1-4
After class Monday and Wednesday
Tuesday by Appointment

COURSE DESCRIPTION: Continuous and discrete-time signals and systems, Fourier, Laplace, and Z transforms and transfer functions, and state space analysis.

COURSE PREREQUISITES: Ordinary Differential Equations and CENG3133 or equivalent.

TEXT REQUIRED: *Fundamentals of Signals and Systems Using the Web and Matlab*, 3rd Edition, Kamen and Heck, Pearson/PH, 2007.

An investment in the Student Edition of MATLAB is worthwhile. The program will be useful to you throughout your career.

METHODOLOGY: Lectures and homework including assignments in MATLAB.

Course Learning Outcomes:

Students will analyze continuous linear systems in the time domain.

Students will analyze discrete-time linear systems in the time domain and the z-transform domain.

Students will analyze linear systems in the frequency domain using transform theory and transfer functions-this is Fourier and Laplace Transforms.

Students will apply linear system theory to the analysis and design of control systems.

Students will learn to design filters using MATLAB.

Course Outline: Note that since I am the Chairperson of the Engineering Division, there may be times that my administrative duties require me to change the schedule somewhat. You will be informed in plenty of time for most changes.

Aug.24	The Course, HOMEWORK RULES, MATLAB and Ch. 1 Fundamental Concepts
Aug.26	Ch. 1 (cont.)
Aug 31	Ch. 2 Time-Domain Models of Systems
Sept. 2	Ch. 2 cont.,
Sept. 7	No Class Labor Day Monday, the 7th of September.
Sept. 9	Chapter 2 cont.
Sept 14	Review for Quiz1
Sept. 16	Quiz 1 over Chapter 1-2—
Sept. 21	Quiz Review, Ch. 3 Fourier Series
Sept 23, 28	Ch 3. Fourier Transforms
Sept 30	Ch. 4,5 Fourier Analysis of Discrete-Time Signals Fourier Analysis of Systems
Oct. 5, 7	Filtering and Applications
Oct 12, 14	Ch. 6 The Laplace Transform and the Transfer Function and Review for Quiz 2
Oct. 19	Quiz 2 over Chapter 3, 4-5, Part of Chapter 6.
Oct.21	Continue with Chapter 6, Start Chapter 7
Oct. 26, 28	Ch. 7 The z-transform and Discrete Time Systems
Nov 2	Ch. 8 Analysis of Continuous-Time Systems by Use of the Transfer Function Representation
Nov. 4	Ch. 8 cont.
Nov 9	Quiz 3 over Ch. 6, 7, 8
Nov. 11	Review

Nov. 16 Ch. 9 Application to Control

Nov. 18, 23 Ch. 10 Design of Digital Filters and Controllers

Nov. 25 NO CLASS - Happy Thanksgiving

Nov. 30 Digital Controller Design

Dec. 2 SUMMARY (The Big Picture!) AND Review for Final Exam4

Dec. ? Exam 4 Whole Course with emphasis on Chapters 8,9,10 -

Check Final Exam Schedule to be sure!!

ATTENDANCE POLICY: Attendance in class is expected and you should understand that classroom participation is an important element in the learning process. Students are encouraged to ask questions and make comments. An absence from class does not excuse students from tests and assignment deadlines. **The instructor would appreciate a phone mail or email message from students who are not going to attend class for whatever reason. If informed, the instructor will keep any handouts for the next class.**

GRADING POLICY: The grading policy of this course will follow the grading system as outlined in the current Catalog of the University of Houston-Clear Lake. In an effort to fairly assign letter grades according to the student's final average, usually there will not be a curve. Instead the following grading policy will hold:

A : 93-100%	C : 73-76 %
A-: 90-92 %	C-: 70-72 %
B+: 87-89 %	D+: 67-69 %
B : 83-86 %	D : 63-66 %
B-: 80-82 %	D-: 60-62 %
C+: 77-79 %	F : 0-59 %

FINAL AVERAGES: Final averages will be determined by the following assignments and weighting:

Quiz 1	20%
Quiz 2	20%
Quiz 3	20%
Quiz 4	20%
HW	10%
Matlab/InClass	5% EACH

Honesty Policy: Every student is expected to follow the honesty policy as described in the catalog. The first honesty violation will result in a grade of 0 on the assignment or test. The second honesty violation will result in a grade of F for the course. Students must remember the honesty pledge on all exams, as a reminder of the honesty code.

American Disabilities Act (ADA)

If you are certified as disabled and entitled to accommodations under the ADA, section 503, please notify the instructor as soon as possible. If you are not currently certified and believe you may qualify, please contact the UHCL Health and Disability Services office.

Accommodations (as specified by the Americans with Disabilities Act) -
Suggested statement: If you will require special academic accommodations, please contact the [Disability Services Office](#) at 281-283-2627.

The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students with a disability. In accordance with Section 504 and ADA guidelines, each University within the System strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact your University's student disability services center.

Drop Rule Limitation

Students who entered college for the first time in Fall 2007 or later should be aware of the course drop limitation imposed by the Texas Legislature. Dropping this or any other course between the first day of class and the census date for the semester/session does not affect your 6 drop rule count. Dropping a course between the census date and the last day to drop a class for the semester/session will count as one of your 6 permitted drops. You should take this into consideration before dropping this or any other course. Visit www.uhcl.edu/records for more information on the 6 drop rule and the census date information for the semester/session.

HOMEWORK RULES

- A. -10 POINTS FOR EACH DAY LATE
- B. For all Problems: (-10 points if violated)
1. Briefly describe the problem to be solved before attempting the solution.
 2. Show all work.
 3. Turn in problems in order
 4. Make the results clear (Circle answers, explain results, etc.)
 5. When an explanation of the results is requested, the numerical solution will not be sufficient.

MATLAB Problems (-10 or more if violated)

1. Write the equations to be solved
2. Describe the solution method (flowchart, description, etc)
3. Comment the MATLAB code
4. Turn in the code and the results (Plots, etc.)

Be Neat - if I cannot read the solution - no credit!!