



Ve216 Introduction to Signals and Systems

2017 Summer

4 Credits

Course Objectives

This course covers the fundamentals of signal and system analysis, focusing on representations of discrete-time and continuous-time signals (singularity functions, complex exponentials and geometrics, Fourier representations, Laplace and Z transforms, sampling) and representations of linear, time-invariant systems (difference and differential equations, block diagrams, system functions, poles and zeros, convolution, impulse and step responses, frequency responses). Applications are drawn broadly from engineering and physics, including feedback and control, communications, and signal processing.

Course Pre/Co-requisites

Ve 215 Introduction to Circuits and preceded or accompanied by Vv 256 Applied Calculus IV or Vv 286 Honors Mathematics IV.

Textbooks

Oppenheim, Alan, and Alan Willsky. Signals and Systems. 2nd ed. Prentice Hall, 1996. ISBN: 9780138147570.

Instructor

Dr. Chong Han, Assistant Professor

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Room 205, University of Michigan-Shanghai Jiao Tong University Joint Institute

Lecture Time and Location

16:00 - 17:40, Monday, Wednesday, and Thursday.

East-Middle Building 1-100 (M/Th), East-Middle Building -300 (W)

Office Hours

18:30 – 20:30, Wednesday, or upon appointments, Room 205, JI building.



Grading

<i>Activity</i>	<i>Percentage</i>	<i>Date</i>
Exam 1	20%	June 15, Thursday June 19, Monday
Exam 2	20%	July 20, Thursday
Final Exam	30%	Final Week
Lab	15%	Weeks 7, 8, 9 (see below)
Homework, Participation, Other Factors	15%	Every Week

Requests for re-grades of exams must be submitted in writing within one week of exam return. All questions may be re-graded.

Lab Arrangement

Section	Week 7	Week 8	Week 9	Lab Location
1	18:20-21:00 (TU)	18:20-21:00 (TU)	18:20-21:00 (TU)	JJ Circuits/Electronics Lab (4F)
2	12:10-14:45 (F)	12:10-14:45 (F)	12:10-14:45 (F)	JJ Circuits/Electronics Lab (4F)

Teaching Assistant

- Yipai Du, duyipai@sjtu.edu.cn
- Xiaoyu Fang, happyvickyfxy@sjtu.edu.cn
- Xinyue Zhu, crystal_zxy@sjtu.edu.cn

Office Hours:

- Du: Thur. 18:20-20:00, Fang: Tues. 16:00-17:40, Zhu: Wed. 14:00-16:00
- Location: E-Reading Room (JI 228)

Honor Policies

All students in the class are presumed to be decent and honorable, and all students in the class are bound by the Honor Code of the UM-SJTU Joint Institute (visit <http://umji.sjtu.edu.cn/honorcode> for more details). You may not seek to gain an unfair advantage over your fellow students; you may not consult, look at, or possess the unpublished work of another without their permission; and you must appropriately acknowledge your use of another's work. Following are specific policies for different types of course assignments:



Individual Assignments: You may discuss individual assignments with your fellow students at the conceptual level, but must complete all calculations and write-up, from scratch to final form, on your own. Verbatim copying of another student's work is forbidden. You may not consult homework solutions from a previous term unless they are made available in a publicly accessible form (no unfair advantage can be sought).

Labs: ABSOLUTELY NO LATE LAB REPORTS WILL BE ACCEPTED. The labs will help you develop engineering skills. Unexcused absence will result in a grade of zero. Students have the responsibility of contacting the instructor or teaching assistant to make up the missed lab.

Exams. Each student must complete the exam solely by her or his own efforts. Questions can be asked only of the course instructors. The exam must be completed within the specified time.

Any violation of the above honor policies appropriate to each piece of course work will be reported to the Honor Council, and if guilt is established penalties may be imposed. Such penalties can include, but are not limited to, letter grade deductions, disciplinary sanctions, or expulsion from the Institute and the University. If you have any questions about this course policy, please consult the course instructors.

List of Lecture Topics (subject to adjustment)

<i>Week Index</i>	<i>Lecture</i>	<i>Activity</i>
1	Signals and Systems	HW1
	Discrete-Time Systems	
2	Feedback, Poles, and Fundamental Modes	HW2
	Continuous-Time Systems	
3	Z Transform	HW3
	Laplace Transform	
4	Discrete Approximation of Continuous-Time Systems	HW4
	Convolution	
5	Frequency Response	HW5; Exam 1
	Feedback and Control	
6	Continuous-Time Frequency Response and Bode Plots	HW6
	Continuous-Time Feedback and Control, Part 1	
	Lab Introduction	
7	Continuous-Time Feedback and Control, Part 2	HW7; Lab 1
	Fourier Representations	
8	Fourier Series	HW8; Lab 2
	Fourier Transform	
9	Discrete-Time Frequency Representations	HW9; Lab 3



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	Discrete-Time Fourier Representations	
10	Relations Among Fourier Representations	HW10; Exam 2
	Applications of Fourier Transforms	
11	Sampling	HW11
	Sampling and Quantization	
12	Modulation, Part 1	HW12
	Modulation, Part 2	
13	Selected Topic	Final Exam

