ESE-305 Deterministic Signals and Systems
Spring 2018

Stony Brook University

Syllabus

1. Course Staff and Office Hours

Instructor: Shan Lin

Email: shan.x.lin@stonybrook.edu

Office Location: Light Eng. 249

Office Phone: 631-632-8398

Office Hours: Thu. 2:30-4:00 PM or by appointment

TA: Hongkai Chen <hongkai.chen@stonybrook.edu>

Location: FREY 313

Time: Tue. & Thu. 1:00-2:20 PM

Hours may change. Please check Blackboard for most up-to-date information.

2. Course Description

Introduction to signals and systems. Manipulation of simple analog and digital signals. Relationship between frequencies of analog signals and their sampled sequences. Sampling theorem. Concepts of linearity, time-invariance, causality in systems. Convolution integral and summation; FIR and IIR digital filters. Differential and difference equations. Laplace transform, Z-transform, Fourier series and Fourier transform. Stability, frequency response and filtering. Provides general background for subsequent courses in control, communication, electronics, and digital signal processing.

Prerequisite: ESE 271.

3 credits.

3. Reading

Textbook:

"Signals and Systems" Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab. Second edition, 1996, Prentice Hall.

4. Topics

This course covers the most basic theory of signals and systems, which are fundamental for most areas of electrical and computer engineering. The concepts are used in circuits, control, communications, signal processing and many other areas. Because of the wide applicability of the ideas, the course is theoretical and somewhat abstract.

We will cover the following topics in some detail:

1. Signals; continuous-time and discrete
2. Systems, especially linear, time-invariant systems
3. Convolution (continuous-time and discrete-time)
4. Frequency-domain description of signals; Fourier transform and Fourier series
5. Transform-domain and frequency-domain description of systems; Laplace transform
6. Discrete-time signals and systems and transforms; discrete-time Fourier transform (DTFT) and Z-transform; fast Fourier transform (FFT)
7. Realization, characterization, and identification of systems

5. Grading

Your grade will be based on assignments, two midterm examinations, and one final examination.

Assignments	TBD
Midterm I	TBD
Midterm II	TBD
Final exam	TBD

6. Homework

Homework will be issued roughly weekly. A full schedule is available on Blackboard. (This schedule may be updated as needed.) All assignments will be due at the beginning of class on the assigned day. No homework extensions will be given except in serious circumstances.

7. Schedule

Classes will be held in room TBD in the TBD Building. Class will meet from 10:00–11:20am on Tuesdays and Thursdays. Mid-term exams will be given on TBD and TBD. The final examination will be given Friday December 11, 2015 from 11:15AM–1:45PM. A full schedule is available on Blackboard. This schedule lists each lecture, its topics, and the corresponding sections of the text. The schedule will be updated as needed.

8. Student Learning Objectives
- an ability to apply knowledge of mathematics, science, and engineering
- an ability to identify, formulate, and solve engineering problems
- an ability to use techniques, skills, and modern engineering tools necessary for engineering practice

9. Electronic Communication Statement

Email and especially email sent via Blackboard (http://blackboard.stonybrook.edu) is one of the ways the faculty officially communicates with you for this course. It is your responsibility to make sure that you read your email in your official University email account. For most students that is Google Apps for Education (http://www.stonybrook.edu/ mycloud), but you may verify your official Electronic Post Office (EPO) address at http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo.

If you choose to forward your official University email to another off-campus account, faculty are not responsible for any undeliverable messages to your alternative personal accounts. You can set up Google Mail forwarding using these DoIT-provided instructions found at http://it.stonybrook.edu/help/kb/setting-up-mail-forwarding-in-google-mail.

If you need technical assistance, please contact Client Support at (631) 632- 9800 or supportteam@stonybrook.edu.

10. Disability Support Services (DSS) Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC Building, room 128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following web site: http://www.stonybrook.edu/ehs/fire/disabilities

11. Academic Integrity Statement

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/ index.html

12. Critical Incident Management Statement

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.