

# ECE355 Signals and Systems

**Instructor:** Dr. Jun Qin, [jqin@siu.edu](mailto:jqin@siu.edu), ENGR E207

**Lectures:** T. TR, 8am – 9:15am, ENGR D0033

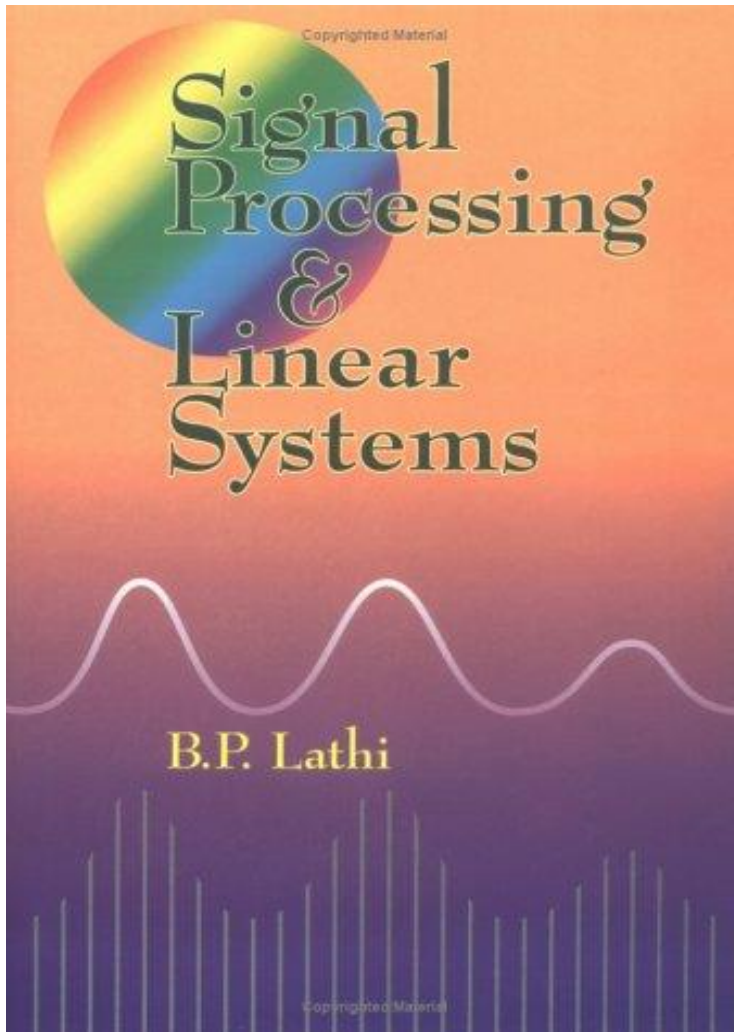
**Office Hours:** T. TR., 1:30pm – 4:30pm, or by appointment.



- **Associate Professor in ECE Department.**
- **Ph.D. from Duke University in 2008.**
- **Research on signal processing for biomedical applications.**

# Textbook

**Signal Processing & Linear Systems**, by B. P. Lathi, Oxford University Press, 1998. (ISBN: 978-0-19-521917-3)



- A comprehensive treatment of signal processing and linear systems suitable for juniors and seniors in electrical engineering.
- Features applications to communications, controls, and filtering.
- Emphasizes the physical appreciation of concepts
- Theoretical results are supported by carefully chosen examples and analogies, allowing students to intuitively discover meaning for themselves.

# Other References

**Masting Matlab 7**, by D. Hanselman and B. Littlefield, Prentice Hall, 2005

**A First Course in Fourier Analysis**, D. W. Kammler, Prentice Hall, 2000

- ❖ References are not required.
- ❖ Lecture notes will be available.
- ❖ Many other references are also useful and available in library

# Course Goals

- To expose students to basic signal processing and linear systems fields
- To introduce the students to the mathematical tools, the method and techniques used for analyzing signals and systems.
- To familiarize the students with the Fourier and Laplace transforms, and concepts that are used to describe and analyze linear analog systems.
- To briefly introduce the students to basic MATLAB programming for signal processing.

# Course Topics

- Signal and system concepts (Chapter 1)
- Time domain analysis (Chapter 2)
- Fourier series and transform (Chapters 3 and 4)
- Laplace transforms, system analysis, and applications (Chapter 6)

# Grading

Grades will be computed based on the following:

Homework	35%
Quizzes	15%
Test 1	20%
Final Exam	30%

A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: < 60

# Notes

1. Students are responsible for all announcements made in class.
2. All assignments should be turned in promptly. **Late homework/ reports will only be allowed with official written permission without penalty, due to: Sickness and family emergencies, or University business. Otherwise, late home is not accepted.**
3. If a test (other than the final exam) is missed for a legitimate reason a grade may be given based on the remaining work.
4. Students are expected to conduct themselves in a professional and ethical manner. Failure to do so could count against the final grade.

**Please No Cheating !**

# ECE355L Computer Labs

- Location: E136 ECE computer lab
- Lab Time: Thursday 9:16 am -11:00 am,
- Two Parts: 1). Introduction to “MATLAB” software.  
2). Computer projects for “signals and systems”.
- About 14 computer labs and 8 lab assignments. **No Lab in the first week.**
- Reference book is not required. Detailed instruction of each lab will be available.
- Every student is required to attend the labs and complete the tasks. The attendances will be counted.



# Tentative Lab Schedule

NO.	Data	Topic	Note
1	01/26	Introduction to Matlab I	
2	02/02	Introduction to Matlab II	
3	02/09	Introduction to Matlab III	
4	02/16	Introduction to Matlab IV	
5	02/23	Introduction to Matlab V	
6	03/02	Operations on signals	
7	03/09	Linear time invariant system response	
8	03/23	Convolution of signals	
9	03/30 (04/06)	Fourier series	Two weeks
10	04/013 (04/20)	Fourier transform	Two Weeks
11	04/27 (05/04)	Laplace transform	Two Weeks

# Tentative Lab Schedule

NO.	Data	Topic	Note
1	01/25	Introduction to Matlab I	
2	02/01	Introduction to Matlab II	Lab Report 1
3	02/08	Introduction to Matlab III	
4	02/15	Introduction to Matlab IV	
5	02/22	Introduction to Matlab V	Lab Report 2
6	02/29	Operations on signals	Lab Report 3
7	03/07	Linear time invariant system response	Lab Report 4
8	03/21	Convolution of signals	Lab Report 5
9	03/28 (04/04)	Fourier series	Lab Report 6
10	04/11 (04/18)	Fourier transform	Lab Report 7
11	04/25	Laplace transform	Lab Report 8

# Lab Grading

Grades of the labs will be computed based on the following:

Lab assignments	50%
Lab attendances	50%
Total:	100%

# Questions