Syllabus – ECE216 Signals and Systems – Winter 2018

Calendar Description

Fundamental discrete- and continuous-time signals, definition and properties of systems, linearity and time invariance, convolution, impulse response, differential and difference equations, Fourier analysis, sampling and aliasing, applications in communications

Learning Objectives

This course introduces signal processing and systems analysis. The prerequisites are ECE212 (Circuit Analysis), MAT188 (Linear Algebra), and MAT290 (Advanced Engineering Mathematics).

The coverage includes: fundamental discrete- and continuous-time signals, definition and properties of systems, linearity and time invariance, convolution, impulse response, differential and difference equations, Fourier analysis, sampling and aliasing, applications in communications.

Instructors

Professor Josh Taylor (course coordinator)
Email: josh.taylor@utoronto.ca
Office: SF1021C
Office hours: Thursday 2-3

Professor Stark Draper
Email: stark.draper@utoronto.ca
Office: BA4138
Office hours: Monday 12-1

Lectures

Section LEC0101
- Monday 5-6 in MC252
- Tuesday 2-3 in NL6
- Thursday 1-2 in NL6

Section LEC0102
- Monday 11-12 in MC252
- Wednesday 11-12 in MC252
- Thursday 11-12 in MC252

Section LEC0103
- Monday 11-12 in NL6
- Wednesday 11-12 in NL6
- Thursday 11-12 in NL6
Head administrative TA

The Head Administrative TA is Haiyan Xu (email: haiyan.xu@mail.utoronto.ca, office: BA4157). Please contact the Head Administrative TA for all administrative issues (e.g., change of tutorial or lab section, exam re-grades). Only contact the Head Administrative TA by email and from your University of Toronto account. If you know you will miss some parts of the course for personal reasons, inform the Head Administrative TA at least two weeks in advance.

Head lab TA

The Head Laboratory TA is Foad Sohrabi, email: foad.sohrabi@mail.utoronto.ca. If you have questions about any aspect of a lab, you should ask the Head Laboratory TA.

Course texts and references

There is no required textbook. The course notes are available on the course website under Course Materials. You may find the following supplementary references helpful:

- *Signals and Systems* by Oppenheim, Willsky, and Nawab. Comprehensive and mathematical.
- *Signal Processing First* by McClellan, Schafer, and Yoder. Introductory, less mathematical.

Problem sets

Problem sets will be assigned most weeks. They will not be collected or graded. The purpose of the problem sets is to assist your learning. The quizzes and exams will assume that you have completed and understood all assigned problems.

Tutorials

Tutorials are held every week starting the week of January 8. The tutorial sections are:

- TUT0101: Friday 3-5 in AB107
- TUT0102: Friday 9-11 in BA1200
- TUT0103: Thursday 4-6 in SF2202
- TUT0104: Tuesday 4-6 in HS106
- TUT0105: Friday 9-11 in GB303
- TUT0106: Wednesday 3-5 in HA403

Labs

- All labs are from 9-11 in SF1013. Each lab section meets every two weeks starting on the dates indicated below.
  - PRA0101: Wednesday starting January 24
  - PRA0102: Wednesday starting January 17
  - PRA0103: Thursday starting January 18
– PRA0104: Thursday starting January 25
– PRA0105: Tuesday starting January 23
– PRA0106: Tuesday starting January 16

• You will work in groups of two. You may choose a partner or ask the lab TAs to help you find one.
• You must turn in your lab report to the TAs by the end of the lab period. Late reports will not be accepted and will receive a grade of zero.
• All labs are based on Matlab. Most students will gain concurrent exposure to Matlab through ECE221.

Exams and Quizzes

There will be two quizzes, one midterm exam, and a final exam.

• The quizzes will be on Tuesday, January 30 and Tuesday, March 27.
• The midterm will be on Tuesday, March 6.

For each the location, coverage, and format will be announced on the course website.

Regrade policy

Grading issues are handled by the Head Administrative TA. Regrade requests will only be accepted within a finite window following an exam or quiz, and will not be accepted during lecture or tutorial. Except for multiple choice quizzes, regrades will only be considered for exams written in pen. We reserve the right to fully regrade any submitted quiz or exam. Therefore, regrading may result in a lower overall grade.

If you believe an error has been made in grading your exam, you should attach a clear, neat, and concise note to your test indicating (i) which questions were graded incorrectly and (ii) why you deserve more points.

Grading

The breakdown of the final grade is:

• 15%: Labs
• 10%: Quizzes
• 25%: Midterm exam
• 50%: Final exam

Planned coverage

• Fundamentals of continuous time signals
• Fourier series of continuous time periodic signals: the CTFS
• Fundamentals of discrete time signals
• Fourier series of discrete time periodic signals: the DTFS
• Geometric perspectives
• Discrete time systems
• Fourier transform of discrete time aperiodic signals: the DTFT
• Continuous time systems
• Fourier transform of continuous time aperiodic signals: the CTFT
• Sampling of CT signals