Faculty of Eng. & Natural Sci.

EE311-202001
Introduction to Signal Processing and Information Systems

Instructor(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Office</th>
<th>Phone</th>
<th>Web</th>
<th>Office Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Özgür Erçetin</td>
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<td>Every Wednesday between 12-2pm, or by appointment.</td>
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Course Content


Objectives

To provide a broad introduction to signal processing and information systems, following upon basic signals and systems knowledge. To provide exposure to basics and selected topics in communication, control, and random signals, with links to practical applications.

Recommend or Required Reading

Textbook

### Assessment Methods and Criteria

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<th>Percentage(%)</th>
<th>Number of assessment methods</th>
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<tbody>
<tr>
<td>Exam</td>
<td>70</td>
<td>7</td>
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<tr>
<td>Assignment</td>
<td>20</td>
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<tr>
<td>Homework</td>
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### Course Outline

Overview of Signals and Systems basics.

Deterministic Signals
- Continuous-time Fourier Series
- Continuous-time Fourier Transform
- Laplace Transform
- Unified understanding of signal processing, communications and control
- Sampling and relationship between continuous- and discrete- transforms

Random Signals
- Review of Probability Theory
- Inference/ Estimation of continuous random signals
- Hypothesis Testing, Neyman Pearson criterion
- Wiener filter

### Learning Outcomes

- discuss the fundamental concepts in signal processing and information systems,
- exhibit and express a unified view of problems in communication, control, and signal processing,
- describe the process of input-output characterization of linear time invariant systems,
- correctly perform calculations involving transforms including continuous and discrete-time Fourier transforms, as well as Laplace and z-transforms,
- perform computer simulations demonstrating main concepts in signal processing including sampling, transforms, and modulation.

### Course Policies

We will have bi-weekly single question (with several parts) multiple choice exam. In total there will be 7 exams during lecture hours. The duration of the exam will be 15-30 minutes depending on the difficulty of exam question.

There will be 4 programming assignments using Matlab. The assignments can be completed as a group.

We will have bi-weekly homework assignments on the subject of the exam that will take place the subsequent week.