STANFORD UNIVERSITY
Department of Electrical Engineering

EE264 Course Overview
Digital Signal Processing
Summer Quarter 2016

COURSE TOPICS:

- Discrete-time random signals
- Sampling and reconstruction
- Changing the sampling rate and multirate processing
- Quantization, oversampling and noise-shaping
- LTI Systems
- Minimum-phase and linear phase systems
- Digital filter structures
- Quantization in digital filter implementations
- Filter design techniques
- The DFT and its properties
- Computation of the DFT
- Spectrum analysis using the DFT
- Time-dependent spectrum analysis
- Parametric signal modeling


PREREQUISITE: EE102B or equivalent

CLASS HOURS: Tuesdays and Thursdays, 11:30 AM - 1:20 PM

LECTURE ROOM: Gates B3

INSTRUCTOR:
Sercan O. Arik
Office: Spilker 231
Email: soarik@stanford.edu

OFFICE HOURS: TBA
TEACHING ASSISTANT: TBA
Email: TBA

TA OFFICE HOURS: TBA

GRADING POLICY: The basis for your final grade will be as follows:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>CONTRIBUTION TO GRADE</th>
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<tbody>
<tr>
<td>Mid-Term Exam</td>
<td>25%</td>
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<tr>
<td>Final Exam</td>
<td>40%</td>
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<tr>
<td>Homework</td>
<td>35%</td>
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MATERIALS: We will use the class website on Canvas as the primary means of information distribution in the course. Make sure you enroll on the course on Canvas, as we will post lecture slides, homework assignments, and solutions there. Hard copies of lecture materials won’t normally be distributed. We will use Piazza as the discussion forum tool, for which you will need to sign up. We encourage your active participation on the class forum to discuss topics related to the recorded or live lectures, homework, etc. Please do not post solutions to any of the assignments. Your grades for the course during the semester will be available to you on Canvas. Also, we will post links to other resources as is appropriate. See below for all relevant links regarding the course material.

ON-LINE LECTURES:
The course is also offered on Stanford Center for Professional Development (SCPD). Therefore the classroom sessions will be recorded and made available through the SCPD server.

RELEVANT LINKS:
Canvas: https://canvas.stanford.edu/courses/27719
Piazza: https://piazza.com/stanford/summer2016/ee264
Recorded Lectures: https://mvideox.stanford.edu

HOMEWORK:

It is by the solution of problems that the investigator tests the temper of his steel; he finds new methods and new outlooks, and gains a wider and freer horizon.

David Hilbert, 1862-1943

This quote from the great German mathematician Hilbert reminds us that the primary way to learn a mathematics-based subject like DSP is to WORK HOMEWORK PROBLEMS. Work as many as possible, and work them CAREFULLY. Most of the homework problems will be assigned from the text, so you must have access to the third edition. About 30% of the problems will also have a computational component, for which we recommend Matlab. However, you are free to use any other software of your preference to solve the computation centric problems (e.g. Python, Octave, R, Julia, C++ etc.).

Homeworks will be assigned on the dates listed on the course schedule. Unless otherwise noted, each assignment will be due on the date specified (usually Thursdays at 5pm). Homework assignments can be handed in class, or they can be placed in the Homework submission cabinet located in the second floor of the Packard Building before 5pm on the due date.

A 24-hour Homework extension is allowed with a 20% penalty. Homeworks submitted after the 24-hour extension WILL NOT be graded, as solutions will be posted 24-hours after the due date.
(hard deadline will usually be Fridays at 5pm). To allow for contingencies, your lowest homework grade will be dropped in the final average.

**ACADEMIC HONESTY:**

All Stanford students have agreed to abide by the Stanford Honor Code. *Copying* solutions to homework problems from classmates or from a “bible” of previous solutions is *not* allowed. Copying from someone else during an exam or otherwise violating the conditions of the exam obviously violates the Honor Code. However, other situations may be less clear. For example, working with other students in solving homework problems is *not* considered dishonest, and it often leads to a good learning experience. However, I expect each student to write up the solution in his/her own words. Specifically, if you work with someone else, talk about the problem, even sketch out a solution on paper or the board, but then sit down alone and write up the solution to be handed in. **DO NOT COPY ANYONE ELSE’S HOMEWORK SOLUTIONS!**

DON’T become dependent upon someone else. You will learn more if you plan and execute the solution to problems on your own.

**IMPORTANT DATES:**

Please note carefully the following dates during the quarter:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>July 21</td>
<td><strong>Mid-Term Exam (11.30 am-1:20pm)</strong></td>
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<tr>
<td>July 29</td>
<td>Last day to change grading basis</td>
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<tr>
<td>TBD</td>
<td><strong>Final Exam (TBD)</strong></td>
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