

New York University – Tandon School of Engineering  
Electrical and Computer Engineering  
**EL 6113: Digital Signal Processing I** — Section B  
Fall 2016  
Instructor: Ivan Selesnick

### Description

EL 6113: Digital Signal Processing I. Discrete and continuous-time linear systems. Z-transform. Fourier transforms. Sampling. Discrete Fourier transform (DFT). Fast Fourier transform (FFT). Digital filtering. Design of FIR and IIR filters. Windowing. Least squares in signal processing. Minimum-phase and all-pass systems. Matlab programming exercises.

### Class hours

Monday, 12:25 pm – 2:55 pm (2 hours, 30 minutes)

### Web

Lecture notes, exercises, and other information online at:

<http://eeweb.poly.edu/iselesni/EL6113/>

### Text

Recommended:

*Discrete-Time Signal Processing*, third edition, by Oppenheim and Schaffer. Prentice Hall, 2010. ISBN-13: 978-0-13-198842-2

*A Course On Digital Signal Processing*, by Boaz Porat. John Wiley and Sons. (ISBN: 0-471-14961-6).

Other DSP textbooks are also good references (Mitra, Proakis, etc.)

### Grading

Homework (HW)	10%
Midterm exam	45%
Final exam	45%

Students may work in groups on the HW assignments. However, what is submitted for HW should be individually written by the student and should represent the student's individual understanding of the material. HWs may be graded by 'spot-checking' rather than comprehensive grading; hence, students should review the provided HW solutions to verify their understanding of the HW problems.

Exams will be closed book and closed notes. A brief formula sheet will be provided with the exams.

### NYU Classes

We will use the discussion board (forum) on the course web page in the NYU Classes system. You can opt to receive by email messages as they are posted on the form. Activate this option using the 'watch' button on the NYU classes page under Forums.

Students are encouraged to ask questions and post their own answers on the discussion board. The instructor or teaching assistants will also post comments on the blackboard discussion board.

### Matlab

Some assignments for this course require MATLAB programming. Students registered for this course can have MATLAB installed on their laptop computer at the Help-Desk in Rogers Hall 339.

Students without prior experience with MATLAB should spend time during the first two weeks of class learning MATLAB. MATLAB manuals are available in PDF format at [www.mathworks.com](http://www.mathworks.com). More Matlab tutorials are available on the web at <http://eeweb.poly.edu/iselesni/Matlab/>

## **Instructor**

Prof. Ivan Selesnick

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## **Policies**

It is not allowed to use cell phones during exams. Cell phones are not allowed to be on your person during exams. Cell phones must be turned off and placed into your bag or backpack, or placed on the instructor's desk. Cell phones can not be used as calculators or as clocks during exams.

Bags and backpacks must be placed at the front of the room during exams.

In case of academic dishonesty on exams or other graded item, a score of zero may be given for that item.

## **Moses Center Statement of Disability**

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at 212-998-4980 or [mosescsd@nyu.edu](mailto:mosescsd@nyu.edu). You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at [www.nyu.edu/csd](http://www.nyu.edu/csd). The Moses Center is located at 726 Broadway on the 2nd floor.

## **NYU School of Engineering Policies and Procedures on Academic Misconduct**

Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who

A. breach the Schools rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the Schools Policy on Academic Misconduct.

B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another persons work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.
2. Fabrication: including but not limited to, falsifying experimental data and/or citations.
3. Plagiarism: intentionally or knowingly representing the words or ideas of another as ones own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.
4. Unauthorized collaboration: working together on work that was meant to be done individually.
5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.
6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.