

EE 328 - Signals and Systems Laboratory

Spring 2015 - ESB 851

Syllabus

1. Instructor: Steven Andryzcik (sandryzc@mix.wvu.edu)

2. Class time and Credit:

Monday 5:00 – 7:50pm 1 credit hour (Sec. 001)

Tuesday 2:00 – 4:50pm 1 credit hour (Sec. 002)

Tuesday 5:00 – 7:50pm 1 credit hour (Sec. 003)

3. Office Hours

Tuesday/Thursday 1:00 – 2:00pm ESB - 901

4. Prerequisites:

Prereq: EE 327, Coreq: EE 329

5. Description:

The objective of this course is to provide students with the fundamental skills and tools of MATLAB. Students are expected to describe and analyze examples of signals and systems from real world applications, be able to design a low-pass and high-pass filter, be able to resolve signal and system problems, and more importantly master the basic knowledge in image processing, speech processing and communication.

There will be 9 laboratories and a project associated with EE 328.

Lab #1: Introduction to MATLAB. (Teaches programming skills, plotting functions, etc.)

Lab #2: Electrical Devices and Instrumentation under MATLAB Simulink (An introduction to the Simulink program)

Lab #3: Time Domain Convolution (Signal Manipulation, Continuous and Discrete time convolution)

Lab #4: Frequency Response of Filters (Transfer function usage, filter types, and bode plots)

Lab #5: Frequency Domain Analysis based on FFT(Usage of Fourier transforms in MATLAB)

Lab #6: The Sampling Theorem in MATLAB (Significance of the Nyquist rate)

Lab #7: Filtering of Audio Signal Processing in MATLAB (Manipulation of a .wav file)

Lab #8: Introduction to Digital Image Processing using MATLAB

Lab #9: Introduction to Communication using MATLAB

6. Attendance:

You are expected to attend every class. Attendance will be taken and will reflect on your final grade.

If you can't attend the session with reasons, please contact with the instructor at least one day before the session.

The decision to allow a make up lab will be at the discretion of the instructor. Appeals to this decision should be directed to the Associate Dean of Academic Affairs.

If you do not attend the lab, you will not be allowed to submit a lab report!

7. Lab Reports:

Lab reports for each experiment are due at the **beginning** of the lab session for the following experiment. **No late report will be accepted.**

- Lab reports must be word-processed and presented in a professional manner. Please hand in the hardcopy. The labs are conducted individually except the term project, which requires group cooperation.
- Format of Lab Report:
 - 1.) Title page
 - Experiment No.
 - Title of Experiment
 - Date conducted
 - Your name in bold
 - Class section
 - 2.) Objective/Brief Theory
 - 3.) Equipment used
 - 4.) Procedure – Brief description of steps involved in the experiment.
 - 5.) Results – include code, waveforms, calculations and graphs.
Please also comment your code to show your understanding of how it works.
 - 6.) Comments/Conclusion – concluding remarks about the lab and material learned.

8. Term Project:

- Projects will be performed in the laboratory period within the laboratory groups.
- The groups will have approximately ten projects to choose from which cover the areas of control, communications, signal processing, etc. The projects will also include a design component.
- The project will include both a report and presentation (in the lab). Each presentation will be approximately 15 minutes long and all members in the group must present. Each report will have guidelines in length and content. Each group only needs to submit one report, although the contribution of each member of the group must be clearly indicated.

- The projects will include a component where the students must do some research on their own.
- The instructor of the EE 329 lecture will have a role in the evaluation process and provide input regarding the final report and presentation grades
- The final project will be held over four lab sessions. The first three sessions will be group discussions and work. No classes for the three weeks. The fourth week will be for the presentations.

9. Grade:

Lab Reports:	50%
Final Project:	30%
Attendance:	10%
Lab Notebook:	10%

Social Justice Statement:

West Virginia University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment, based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate people on the basis of race, color, national origin, sex, age, disability, veteran status, religion or sexual orientation. Any suggestions as how to further such a positive and open environment in this class will be appreciated and given a serious consideration. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with Disability Services (293-6700). If you feel that you are being treated inappropriately or unfairly in any way, please feel free to bring your concerns into my attention. Please be assured that doing so will not prejudice the grading process. In return, I expect you to behave professionally and ethically.