

SAMPLE SYLLABUS

This syllabus is to be used as a guideline only. The information provided is a summary of topics to be covered in the class. Information contained in this document such as assignments, grading scales, due dates, office hours, required books and materials may be from a previous semester and are subject to change. Please refer to your instructor for the most recent version of the syllabus.

ABET Course Syllabus EEE203

1. **Course: EEE 203 Signals and Systems I**
2. **Credits and Contact Hours:** 3 Credit Hours (lecture), Topics: Engineering
3. **Course Coordinator:** Systems Area Committee
4. **Textbook:** Oppenheim and Willsky with Nawab, *Signals and Systems, 2nd Ed.*, Pearson, 1997.
Supplemental materials: None
5. **Specific course information**
 - a. **Catalog description:** Introduction to continuous and discrete time signal and system analysis, linear systems, Fourier, and z-transforms. Lecture.
 - b. **Prerequisites or co-requisites:** EEE202, pre- or co-: MAT342 or MAT343
 - c. **Required/elective/selected elective:** Required
6. **Specific goals for the course**

Students understand continuous-time and discrete-time linear systems. Students can apply Fourier analysis to important problems in communication and signal processing.

 - a. **Outcomes of instruction:**
 - i. Students will be able to describe the function of electric circuits that perform logic operations using symbols for logic gates or input/output tables (truth tables).
 - ii. Students will be proficient in the use of algebraic equations to describe and analyze Digital Logic circuits and use Boolean Algebra to simplify the circuits.
 - iii. Students will be able to perform algebraic operations in different number systems.
 - iv. Students will be able to design, build, debug, and demonstrate the operation of arbitrarily complex combinational Digital Logic circuits.
 - v. Students will be able to design, build, debug, and demonstrate the operation of arbitrarily complex synchronous machines given a reasonable problem statement.
 - vi. Students will be able to set criteria to determine the “best” design and select the best design.
 - vii. Students will be able to describe the operation of an elementary microprocessor, create an instruction set for an elementary microprocessor, and enter the instruction set into the processor’s instruction PROM. Students will also be able to enter a program in the processor’s memory and execute the program.
 - b. **Outcomes of Criterion 3 addressed by the course:**

(1): Considerable math background; fundamental EE background in signals and systems, which is a cornerstone of DSP, communications, controls, as well as applications in power systems and circuits. Identify and formulate engineering problems, e.g., filtering, sampling.

(1,2,6): Use of modern engineering tools (software) to solve problems
7. **Brief list of topics to be covered**
 1. Continuous-time (CT) and discrete-time (DT) signals
 2. CT and DT systems
 3. Linearity, time-invariance, causality, and block diagrams of systems
 4. Impulse response and FIR/IIR systems
 5. CT and DT convolution
 6. Transient and steady state responses

7. Fourier transform and its properties
8. Frequency response and frequency-domain analysis of CT systems
9. Laplace transform and its properties
10. Z transform and its properties
11. Introduction to frequency-domain analysis of DT systems
12. Sampling theorem
13. BIBO stability

Computer Usage:

Exercises and demonstrations using MATLAB and/or LABVIEW

Laboratory Experiments:

None

Course Contribution to Engineering Science and Design:

Engineering design is emphasized in EEE 203 through the use of open-ended exercises. Most of these involve specification of a filter to accomplish a particular goal or design of signals having desired properties. An example of the first type of problem is to specify the impulse response of an analog filter that will pass a radio transmission while rejecting a signal in a nearby frequency band. Since there are many possible solutions to such a problem, students are able to consider design tradeoffs and issues involved in practical implementation.

Person preparing this description and date of preparation: K. Tsakalis, June, 2021.