Class Information
Instructor: Jose Oscar Mur-Miranda (Previous class development by Bradley Minch and Gill Pratt)
Times and location: TF 9am-9:50am and W 9-10:50am in AC304 (F 9am-9:50am is eliminated during weeks with tutorials)
Tutorials: [http://faculty.olin.edu/~jmurmiranda/ENGR3420F05 Tutorials (Revised).pdf](http://faculty.olin.edu/~jmurmiranda/ENGR3420F05 Tutorials (Revised).pdf)
Website: [http://faculty.olin.edu/~jmurmiranda/adcf05.htm](http://faculty.olin.edu/~jmurmiranda/adcf05.htm)
Instructor e-mail: jomm@olin.edu
Instructor telephone: (781)292-2544

Outcomes
By the end of the course, the students should be able to:
- Understand the fundamental theorems of network analysis: KVL, KCL, Tellegen, Thevenin, Norton and Superposition.
- Calculate the step and impulse responses of first order and second order networks.
- Represent linear networks using transfer functions.
- Understand the definition of the continuous-time Fourier transform and its properties.
- Analyze, design and optimize amplitude, frequency and spread-spectrum communication systems using quantitative tools in the frequency domain.
- Design, construct, test and debug different implementations of modulators and demodulators.
- Calculate the information contained in a message and the entropy of a source as a measure of its average information output.
- Describe the fundamental trade off between bandwidth and bit rate imposed by noise in a communications channel.

Student Assessment
- Students will be assessed using written exams and laboratory reports. There will be three laboratories for which the students will be asked written reports. In these reports, the students will explain a given communication system, describe a circuit that implements the system, and discuss observations of the implementation. Written exams will be used throughout the course to assess the understanding of theoretical concepts and analytic tools.
Competencies developed

- Qualitative Analysis, Quantitative Analysis and Diagnosis will be extensively developed through written exams as well as through design and implementation of laboratories.

Competencies assessed (method of assessment)

- Qualitative Analysis (laboratory reports, written exams and homework)
- Quantitative Analysis (laboratory reports, written exams and homework)
- Diagnosis (laboratory reports)

Level of Achievement expected

- Given that the class is composed of juniors in ECE, and in light of the competencies developed, the level of achievement expected in quantitative analysis, qualitative analysis and diagnosis is advanced.

Classroom Assessment

- This course is currently under development. While the subject material is also covered in similar classes outside Olin, the delivery of the class will be based in the “do-learn” method typical of Olin classes. Thus, questions of scope and depth will be addressed in a continuing dialog between the instructor and the students. In particular, the instructor will meet with the students at regular intervals to administer short oral exams in order to find points where the material needs reinforcement. At these meetings, the students will also be able to provide feedback to the instructor regarding class pace, content and level of complexity.

References


