EC 534 – ANALOG AND DIGITAL SIGNAL PROCESSING

Hour: Lecture: 2 Hrs. Tutorial: 2 Hrs. Credit: 3.
Coordinator: Khaled Shahata

Text Book:

- Savant, Roden, and Carpenter. "Electronic Design" Benjamin cummings publ.
- Ifeachor & Gervis. "Digital Signal Processing".

Specific course information:

a. Simple analog wave shaping circuits, Sinusoidal and square wave generators. Design of RC active filters, ADC's and DAC's. Discrete transforms. Digital filter design.
b. Prerequisite: EC 331
c. Designation: Required

Specific goals for the course:

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to design and conduct experiments, analyze and interpret data.
- An ability to function on multi-disciplinary teams.
- An ability to communicate effectively.
- A recognition of the need for, and an ability to engage in life-long learning.

Course instruction outcomes:

- The students will be able to Understand the basic concepts of analog signal generation and shaping. Data converters, discrete time transforms. Digital filter design.
- The students will be familiar with basic operations on analog and digital signals.

Student outcomes:

A, B, D, G, J

Topics Covered:

- Sinusoidal oscillators
- Multivibrators
- Clipping And clamping circuits
- Problems on Clipping and clamping circuits
- Differentiating and integrating circuits
- Design of analog filters
- Sampling of analog signals, S/H circuits
- DAC's
- Quantization techniques
- Analog to digital converters

- ADC's cont.
- Introduction to discrete time transform. The DFT and DCT, the FFT
- The Z transform, Time and frequency analysis of digital filters
- Design of IIR filters using BZT
- Design of FIR filters using windowing

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
ANALOG AND DIGITAL SIGNAL PROCESSING (EC534)/3		3	