Engineering Program

Specialty	Medical Equipment Technology
Course Number	020406253
Course Title	Digital Signal Processing
Credit Hours	3
Theoretical Hours	3
Practical Hours	0

Brief Course Description:

- Students should acquire a *Theoretical* knowledge about: Sinusoids, Spectrum representation, Sampling and Aliasing, and FIR filters.

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1	Introduction	Mathematical Representation of Signals Mathematical Representation of Systems	
2	Sinusoids	Review of Sine and Cosine Functions Sinusoidal Signals Sampling and Plotting Sinusoids Complex Exponentials and Phasors Phasor Addition	
3	Spectrum Representation	The Spectrum of a Sum of Sinusoids Beat Notes Periodic Waveforms Fourier Series Spectrum of the Fourier Series Fourier Analysis of Periodic Signals Time-Frequency Spectrum	
4	Sampling and Aliasing	Sampling Spectrum View of Sampling and Reconstruction Strobe Demonstration Discrete-to-Continuous Conversion The Sampling Theorem	
5	FIR Filters	Discrete-Time Systems The Running-Average Filter The General FIR Filter Implementation of FIR Filters Linear Time-Invariant (LTI) Systems	

		Convolution and LTI Systems Cascaded LTI Systems Example of FIR Filtering	

Evaluation Strategies:

Exams		Percentage	Date
Exams	Med-Term Exam	40%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----

Teaching Methodology:

- Lectures
- Data Show

Text Books:

- Signal Processing First, James H. McClellan & Ronald W. Schafer.