ECE/Math 430 – Fourier and Wavelet Analysis and Applications

INPUT

Calculus
Vectors and dot products
Complex numbers

OUTPUT

Concepts:

Fourier series
• the Fourier transform and its properties
• the discrete Fourier transform and its properties
• Fourier transforms on various function spaces, including
  • L^1, L^2, and tempered distributions

Sampling
Uncertainty relations
Poisson formula, and aliasing
Relationships between the transforms
The continuous wavelet transform and its inverses
Multi-resolution analysis
The discrete wavelet transform and its inverse

Can use Fourier methods to analyze frequency content of signals

Is comfortable with the notion of functions being vectors in a vector space

Understands the basics of distribution theory

Can use Matlab FFT and iFFT

Can use Matlab wavelet transform