

Math 334 Course Outline

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The following is a list of topics to be covered in the course.

1. Motivation for signals
2. Classes of signals: discrete- and continuous-time
3. Algebraic structure of signal spaces: vector spaces
4. Analytical structure of signal spaces: norms and inner products
5. Completeness of normed vector spaces
6. Discrete-time signal spaces: c_0 -spaces, ℓ^p -spaces
7. Integration theory
8. Continuous-time signal spaces: continuous signals, C^0 -spaces, L^p -spaces.
9. Continuous-discrete Fourier transform: L^1 -CDFT, inversion, Fourier series, L^2 -CDFT
10. Continuous-continuous Fourier transform: L^1 -CCFT, inversion, Fourier integrals, L^2 -CCFT
11. Discrete-continuous Fourier transform: L^1 -DCFT, inversion, L^2 -DCFT
12. Discrete-discrete Fourier transform: definition, fast Fourier transform