

ECE457 Fourier Optics

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IN

Linear Systems Theory

Fourier Transforms

Basic Optics, Interference

E&M, plane wave propagation

Matlab simulation, FFT, etc.

Pre-requisites:

- ECE311 and ECE342

Concepts:

- Fourier transforms in optical systems
- Angular (wavenumber) Spectrum analysis of optical systems and propagation
- Scalar diffraction theory
- Optical Coherence

Applications:

- Matlab simulation of propagation in optical systems
- Application of Fourier and linear systems to optical systems
- Gain intuitive understanding of optics and propagation

Tools:

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- Can compute diffraction of optical fields numerically and analyze with Fresnel and Fraunhofer propagation

- Can calculate imaging transfer functions for coherent and incoherent imaging system

- Can analyze and design optical Fourier processing systems

- Can design and numerically simulate a full complex optical system