Expected Outcomes for EE119: Introduction to Optical Engineering

1) Basic knowledge of the laws governing optical propagation and the influence of boundaries and finite transverse extent on optical beams.

2) To have acquired basic knowledge of optical components and instruments.

3) Have knowledge and understand the measurement of first order spatial and temporal coherence.

4) To have a conception of sources of coherent and incoherent optical beams.

5) To have acquired the basic concepts of spontaneous and stimulated emission and their role in optical gain and noise.

6) Understand the principles of optical feedback, resonant cavities.

7) To have acquired a comprehension of detection principles and the various types of detectors.

8) To have an understanding of the modulation of light beams and to be able to discuss various techniques for accomplishing this.

9) To have acquired a basic comprehension of fiber optical systems, the important parameters, and various standards and economic issues.

10) To have acquired some knowledge of optical signal processing techniques, including: holography, Fourier transforms, and phase contrast.

11) To have some knowledge of recent developments in linear, nonlinear, and surface wave optics.

12) To have exposure to experimental technique, either through demonstration experiments, mini-labs, or a class project.