

OPTI 500A- Photonic Communications Engineering I A

Course Description:

Photonic Communications Engineering consists of two parts. Each course is further broken down into three sections: A, B and C. PCE I A covers optical fiber light guiding, wave propagation characteristics, materials properties, and fabrication. PCE I B covers optical transmitters, receivers and amplifiers. PCE I C covers communications systems, fiber optics networks, and Internet infrastructure. Sections A, B and C are each 1 credit and can be taken in any combination. When all three sections are taken together the course is designed as a survey, from the device to the systems level, of Photonic Communications Engineering. Reference material for the course is in a digital platform to allow dense hyperlinking between topics so that students from various disciplines can customize the reading material to their individual background knowledge.

Grading Policy:

Section A Exam (covering modules below) will determine the Course Grade.

The grade will be determined according to the percentage earned such that 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, below 60% = E.

See [Office of the Registrar website](#) for courses within a semester with different start and end dates.

Outline

Part A – Guided Wave Optics

Ray and Wave Optics

Slab Waveguides

Rectangular Waveguides (Marcatilli and Effective Index Method)

Optical Fibers

Coupling into Optical Waveguides

Bend Loss

Coupled Mode Theory

Exam