

OPTI 500F- Photonic Communications Engineering II F

Course Description:

Photonic Communications Engineering (PCE) consists of two parts (I and II). PCE I covers optical fiber light guiding and wave propagation characteristics, materials properties, optical transmitters, receivers and amplifiers, communications systems and fiber optics networks and the Internet. PCE II builds upon this knowledge with advanced subjects in system modeling, device integration, and systems-level engineering. Reference material for the course is in a digital platform to allow dense hyper-linking between topics so that students from various disciplines can customize the reading material to their individual background knowledge.

Prerequisites: OPTI 500A, B and C

Grading Policy:

Section F Exam (covering Modules 11-13) will determine the Course Grade in 500 II F.

Each Module will have 3 exam questions of which students select 2 questions to answer (or complete all questions and 2 highest scores are chosen by the instructor). All questions are weighted equally towards 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:

Module 11: Advanced Systems

- Optical Code Division Multiple Access (OCDMA)
- Spread-spectrum communications (SSC)
- Optical CDMA Networking: Users are Codes

Module 12: The Internet and Networking Protocols

- The Internet architecture and the TCP/IP protocol stack
- Medium Access Control (MAC) Layer
- Network Layer (Routing)
- Transport Layer (TCP/IP)

Module 13: From Technology Innovation to the Marketplace

- Stages of product development and the major components of an enterprise
- Models for managing product development, especially stage-gate models
- Establishing an innovation driven culture
- Fundamentals of intellectual property and its protection
- Case studies from the optical communications industry

Review

Exam