EE 230 Optical Fiber Communication
Fall 2002

Instructor: Prof. Claire Gu, 253B Baskin Engineering
9-5296, claire@cse.ucsc.edu

Textbook: Govind P. Agrawal
Fiber-Optic Communication Systems, 3rd Edition

Reference books:
- Fiber-Optic Communications Technology / D. K. Mynbaev and L. L. Scheiner
- Fiber Optic Communications / Joseph C. Palais
- Optical Fiber Communications / Gerd Keiser
- Fiber optic networks / Paul E. Green
- An introduction to fiber optic systems / John P. Powers
- Optical Communication Networks / Biswanath Mukherjee

Evaluation:
- Homework and Class Participation: 25%
- Midterm #1: 25%
- Midterm #2: 25%
- Final Presentation: 25%

Course Outline

Fibers:
- Step-index fibers, graded-index fibers.
- Fiber modes, single-mode fibers, multimode fibers.
- Dispersion, mode coupling, and loss mechanics.
- Glass materials, fiber fabrication, and characterization techniques.

Sources and Transmitters:
- Light-emission processes in semiconductors.
- Light-emitting diodes (LEDs).
- Semiconductor lasers, (laser diodes: LDs).
- Modulation response.
- Source-fiber coupling.

Detectors and Receivers:
- Photodetectors, receivers.
- Receiver noise and sensitivity.

Systems:
- System design: power budget and rise-time budget.
- Single-Wavelength Fiber-Optic Networks (FDDI, SONET)
- Wavelength-Division Multiplexing (WDM)