OSE 6143
Fiber-Optic Communication

Dr. Guifang Li
Room 53- 278 (407) 823-6811
li@creol.ucf.edu

Course Details

Topics

• Part I: Introduction: Where optical communication fits in networks
• Part II-1: Loss-Limited Optical Transmission
  — Sensitivity Limits for Direct Detection
  — Optical Amplifiers
  — Sensitivity Limits for Preamplified Direct Detection
• Part II-2: Dispersion-Limited Optical Transmission
  — Dispersion Penalties
  — Dispersion Compensation
• Part II-3: Advanced Modulation Formats
  — Differential Detection
  — Coherent Detection
• Part II-4: Long-Haul Optical Transmission
  — Linear Noise Limit
  — Nonlinearity Limit
• Part III: Multi-Channel Transmission (WDM)
  — Components for WDM
  — Nonlinearities in WDM Transmission
• Part IV: Advanced Topics (2 topics)
  — Wavelength\(\lambda\)-Conversion
  — Optical Regeneration
  — Digital Coherent Transmission
  — Polarization Mode Dispersion
  — Analog Links

Pre-requisites: OSE6111 Optical Wave Propagation or OSE5414 Fundamentals of Optoelectronic Device;
Reading Materials
Elements of Photonics by Keigo Iizuka (Wiley 2002)

Grading
Homework: 30%
Midterms: 40%
Final Exam: 25%
Class Participation 5%