

OSE 6143

Fiber-Optic Communication

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

CourseDetails

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 λ -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)

Fiber-Optic Communication Systems, 3rd Edition by [Govind P. Agrawal](#) (Wiley 2002)

Grading

Homework: 30%

Midterms: 40%

Final Exam: 25%

Class Participation 5%