Course Outline

- Introduction (.5 week)
- Optical Components (1.5 weeks)
  - Optical fiber
  - Transmission systems - transmitters, receivers, amplifiers
  - Interconnection devices - filters, switches, wavelength converters
  - System design issues
- Optical Network Architectures (1 week)
  - Layered models - overlay vs. integrated
  - Optical layer network architectures - circuit, burst, packet switched
  - Optical crossconnect architectures
  - SONET
- Wavelength-Routed Optical Networks - Static Design (3 weeks)
  - Traffic grooming
  - Virtual topology design
  - Static routing and wavelength assignment
- Wavelength-Routed Optical Networks - Dynamic Lightpath Establishment (2 weeks)
  - Dynamic RWA algorithms
  - Distributed signaling protocols
- Protection and Restoration (2 weeks)
  - Classification of protection and restoration schemes
  - SONET protection in ring networks
  - Optical-layer protection in ring and mesh networks
- Optical Packet Switching (1 week)
  - Contention resolution
  - Switch architectures
- Optical Burst Switching (1 week)
  - Signaling protocols
  - Contention resolution and scheduling
  - QoS
- Optical Access Networks and LANs (1 week)
  - PONs
  - Broadcast and select networks - single-hop
  - Broadcast and select networks - multihop