**IQRA NATIONAL UNIVERSITY**

**DEPARTMENT OF COMPUTER SCIENCE**

**COURSE PLAN OF Optical Communication System**

Mansoor Qadir

**Course Objective:**

The purpose of this course is to give a brief knowledge about the Optical fibers and the working principles associated with Optical Communication Systems.

**Text Book:**

1. Fiber Optic Communication Technology by Djafar k. Mynbaev and Lowell L. Scheiner.
2. Optical Fiber Communications – Principles and Practice by John M. Senior.

**Course Outline:**

General Introduction about Telecommunication, the Basic Blocks. Physics of Light: A Brief Overview Electromagnetic Waves and Beams, A stream of photons, Attenuation, Intermodal and chromatic Dispersion, Single Mode Fibers, Light Source and Transmitter Light Emitting Diodes (LEDs) & Laser Diodes (LDs) and its Characteristics. Components of Fiber Optics Networks, Transceivers for Fiber Optic Networks, Semiconductor Optical Amplifiers, Erbium – Doped Fiber Amplifiers (EDFAs). FTTx, PON.

**Topics Included In the Course**

**Semester Plan**

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| **Week #** | **Content** |  |
| Week 1: | Introduction to Telecommunication and Fiber OpticsGeneral Introduction about Telecommunication A Fiber Optic Communication System: The Basic Blocks |  |
| Week 2: | **Physics of Light : A Brief Overview*** Electromagnetic Waves and Beams
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| Week 3: | **Physics of Light : A Brief Overview*** A stream of photons
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| Week 4: | **Optical Fiber - Basics*** Optical Fiber Phenomena
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| Week 5: | **Optical Fiber - Basics*** Attenuation
 | Assignment 1  |
| Week 6: | **Optical Fiber – Basics*** Intermodal and chromatic Dispersion
* Bit rate and Bandwidth Defined
 | Quiz 1 |
| Week 7: | **Single Mode Fibers - Basics*** Working Principles of single Mode fiber
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| Week 8: | **Single Mode Fibers – Basics*** Attenuation
* Dispersion and Bandwidth
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| Week 9: | **Light Source and Transmitter - Basics*** Light Emitting Diodes (LEDs)
 | Assignment 2 |
| Week 10: | **Light Source and Transmitter - Basics*** Laser Diodes (LDs)
* The Characteristics of Laser Diodes
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| Week 11: | **Components of Fiber Optics Networks*** Fiber Optic Networks : An Overview
 | Quiz 2 |
| Week 12: | **Components of Fiber Optics Networks*** Transceivers for Fiber Optic Networks
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| Week 13: | **Components of Fiber Optics Networks*** Semiconductor Optical Amplifiers
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| Week 14: | **Components of Fiber Optics Networks**Erbium – Doped Fiber Amplifiers (EDFAs) |  |
| Week 15: | **Advance topics in Optical Communication*** FTTH/PON
 | Assignment 3 |
| Week 16: | Revision | Quiz 3 |