Course Code: TCOM 151.1

Title: OPTICAL COMMUNICATIONS AND TRANSMISSION MEDIA

Instructor: Nathaniel Libatique, Ph.D., T. J. Sevilla, Lic. ECE

Time: 9:00 am -12:00 noon, Saturday, F114

Semester: 2nd Semester, SY 2012-13

In this subject we discuss fiber optic communication systems. It begins with a review of optics and lightwave fundamentals and goes on to discuss the basic principles of waveguiding and coupling in and out of optical fibers. We also discuss the various designs of optical fiber, multimode, single mode and graded index and how transmission impairments such as attenuation and the different types of dispersion affect the system's BL product. Other topics such as loss budgets, light sources and detectors, fiber optic couplers and connectors, modulation, multiplexing and noise are also covered.

1. Review of Lightwave Fundamentals
2. Optical Communications History and Overview
3. Optical Fiber and Fiber Cable construction, design and fabrication
4. Attenuation and Loss
5. Dispersion: waveguide, material and modal
6. Sources and Detectors
7. Modulation, Noise and Multiplexing
8. Other Topics

At least two exams will be given as well as one Final Exam. Seathwork, homework and class participation will also constitute part of your class standing.

Attendance will be taken, 9 hours of absence will constitute an automatic withdrawal from the course.

The final grade will be calculated from the class standing, CS, as follows:

Grade = A if CS >=95, B+ if CS >= 87, B if CS >= 78, C+ if CS >= 69, C if CS >= 60, D if CS >= 50 else F

References:

1. Joseph Palais, *Fiber Optic Communications*, 4th Edition, Prentice Hall, 2004.
2. Govind Agrawal, *Fiber Optic Communication Systems*, Wiley, 1997.
3. A. Ghatak and K. Thyagarajan, *An Introduction to Fiber Optics*, Cambridge Univ. Press, 1998.

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