COURSE	Name	: Optical Networks and Communication Systems
	Code	: EE185632
	Credit(s)	: 2
	Semester	: (Elective Course)

Description of Course

This course discusses communication systems that use fiber-optic media, such as studying the concepts of fiber-optics, optical transmitters, optical detectors, analog and digital transmission designs, and understanding local and global optical networks. Equally important is studying the standard aspects and techniques of measuring optical systems.

Learning Outcomes

Knowledge

(P01) Mastering the concepts and principles of science in a comprehensive manner, and to develop procedures and strategies needed for the analysis and design of systems related to the field of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics as a preparation for further education or professional career.

Specific Skill

(KK01) Being able to formulate engineering problems with new ideas for the development of technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU12) Mampu mengimplementasikan teknologi informasi dan komunikasi dalam konteks pelaksanaan pekerjaannya.

Attitude

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently.

(S12) Working together to be able to make the most of his/her potential.

Course Learning Outcomes

Knowledge

Mastering the concepts, principles, and procedures for designing optical and network communication systems, ranging from physical aspects of light and propagation to understanding and being able to choose the right media and parameters in the design and application of optical systems or communication networks.

Specific Skill

Able to formulate technically through survey design and link budget design and able to plan optical communication systems and networks in accordance with regulations, including being able to measure system performance and adequate quality according to applicable standards and regulations in the field of communication and optical networks, including alternative problem solving on the system.

General Skill

Having the ability to design communication systems and optical networks, both analog and digital, ranging from element selection, parametration to special network design.

Attitude

Demonstrating the results of learning to obey the law through disciplinary learning and work together to make the most of their potential.

Main Subjects

1. Definition and introduction of communication systems and optical networks
2. Communication system using light
3. Fiber optic structure, fabrication method and fiber-optic key parameters
4. Wave propagation in fibers and types of optical degradation
5. Optical Link Budget
6. Optical transmitters and sources
7. Optical power connection (power launching & coupling)
8. Light detection and optical receiver
9. Analog and digital networks
10. Optical multiplexing: WDM, WDMA
11. Optical amplifier
12. Local and Global Optical Networks
13. Measurement of device and optical system performance

Reference(s)

[1] UU Telekomunikasi dan ITU G Optical
[2] Gerd Keiser, ”Optical Fiber Communications” 3rd edition, 2000
[3] Joseph C. Palais, “Fiber Optic Communications”, Prentice-Hall, 4th Ed, 1998
[4] Paul E. Green Jr., “Fiber Optic Network”, Prentice-Hall, 1993
[5] Govind P. Agrawal, “Fiber Optic Communication Systems”, Willey Interscience, 1992
[6] Endroyono, Handout: Sistem Komunikasi dan Jaringan Optik, Elektro

Prerequisite(s)

- Propagation and Radiation
- Digital Communication Systems