

## City University of Hong Kong

**Information on a Course  
offered by Department of Electronic Engineering  
with effect from Semester B 2012/13**

**Part I**

Course Title: Optical Communications

Course Code: EE6428

Course Duration: One Semester (13 weeks)

No. of credits: 3

Level: P6

Medium of Instruction: English

Prerequisites : Nil

Precursors : EE3008 Principles of Communications or equivalent

Equivalent Course : Nil

Exclusive Courses: Nil

**Part II****Course Aims:**

The course aims to provide students with solid foundation and technical knowledge in fibre optic communication technologies, and to stimulate student's interest in learning and developing the necessary skills for communication engineering profession.

**Course Intended Learning Outcomes (CILOs)**

Upon successful completion of this course, students should be able to:

No.	CILOs
1.	Identify and understand the components used, and the general concepts in optical fibre communications
2.	Describe the general concepts and apply the fibre optic skills to system design
3.	Recognize and apply the latest fibre optic technologies

**Teaching and Learning Activities (TLAs)**

*(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)*

CILO 1	Lecture, tutorial, laboratory
CILO 2	Lecture, tutorial
CILO 3	Lecture, in-class exercise, case study

Timetabling Information

Pattern	Hours
Lecture:	26
Tutorials:	13*
Laboratory:	
Other activities:	

\* Some tutorials will be conducted in the laboratory.

**Assessment Tasks/Activities**

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

	Type of assessment tasks	Weighting (if applicable)
Continuous Assessment	Tests, Laboratory Work and Report	40%
Examination	Written exam	60% 2 hours

Remarks:.. To pass the course, students are required to achieve at least 35% in course work and 35% in the examination.

**Grading of Student Achievement:**

Refer to Grading of Courses in the Academic Regulations for Taught Postgraduate Degrees.

Letter Grade	Grade Point	Grade Definitions
A+	4.3	Excellent
A	4.0	
A-	3.7	
B+	3.3	Good
B	3.0	
B-	2.7	
C+	2.3	Adequate
C	2.0	
C-	1.7	
D	1.0	Marginal
F	0.0	Failure

**Constructive Alignment with Programme Outcomes**

PILO	How the course contribute to the specific PILO(s)
1,2,3,4	This course aims to provide students with knowledge in optical communications. Upon completion of this course, students will gain knowledge and applications of fibre optic technologies.
3	Students are required to complete laboratory experiments to gain practical hands-on experience

**Part III****Keyword Syllabus:**Introduction to Fibre Optic Communications

Historical perspective.

Optical Fibre Waveguides

Step index fibres. Graded index fibres. Attenuation. Modes in step-index and graded-index fibres. Pulse distortion and bit rate in optical fibres. Fabrication of optical fibres.

Fibre Splices, Connectors, and Couplers

Connector principles. Splices. Connectors. Source coupling.

Light Sources and Detectors

Laser principles. Laser diode characteristics. Light emitting diode characteristics. Principles of photodetection. PIN photodiode. Avalanche photodiode.

Distribution systems

Distribution networks. Directional couplers. Star couplers. Switches. Wavelength-division-multiplexing.

Optical Fibre Systems

System design considerations. Choice of optical components. Optical power budgeting. Digital and analog systems. Optical amplifiers.

**Recommended Reading:**

J M Senior : Optical Fiber Communications: Principles and Practice, (Prentice Hall)

J Gowar : Optical Communication Systems, (Prentice Hall)

J Wilson and J F B Hawks : Optoelectronics, (Prentice Hall)

**Online Resources (if any)**

Nil