

University of Puerto Rico
 Mayagüez Campus
 College of Engineering
 Department of Electrical and Computer Engineering
 Bachelor of Science in Electrical Engineering

Course Syllabus

1. General Information:	
Alpha-numeric codification: INEL 5307 Course Title: Optical Communication Number of credits: 3 Contact Period: 3 hours of lecture per week Elective in INEL and ICOM	
2. Course Description:	
English: Fiber Optic Communications systems, Optics, Light Wave Fundamentals, Integrated Optic Waveguides, Optic Fiber Waveguides, Light Sources and Detectors, Optical LAN Distribution, and Modulation. Spanish:	
3. Pre/Co-requisites and other requirements:	
Prerequisite INEL 4301 & INEL 4152	
4. Course Objectives:	
This course is designed to introduce 5th year students to important results from the fields of optics and wave travel, fiber optic devices and systems, technology of combining optic components onto a single substrate, fiber as a waveguide, light sources, detectors, couplers, and distribution networks. After completing the course the student should be able to design and specify systems and to choose and evaluate system components such as fibers, light sources, detectors, and couplers.	
5. Instructional Strategies:	
<input checked="" type="checkbox"/> conference <input type="checkbox"/> discussion <input type="checkbox"/> computation <input type="checkbox"/> laboratory <input type="checkbox"/> seminar with formal presentation <input type="checkbox"/> seminar without formal presentation <input type="checkbox"/> workshop <input type="checkbox"/> art workshop <input type="checkbox"/> practice <input type="checkbox"/> trip <input type="checkbox"/> thesis <input type="checkbox"/> special problems <input type="checkbox"/> tutoring <input type="checkbox"/> research <input type="checkbox"/> other, please specify:	
6. Minimum or Required Resources Available:	
Fiber Optic Communications _____, Joseph C. Palais Fifth ed. 2005, Prentice Hall	
7. Course time frame and thematic outline	
Outline	Contact Hours
FIBER OPTIC COM. SYSTEMS	5
OPTICS REVIEW	5
LIGHT WAVE FUNDAMENTALS	10
INTEGRATED OPTIC WAVEGUIDES	5
OPTIC FIBER WAVEGUIDES	5
LIGHT SOURCES	5
LIGHT DETECTORS	4
DISTRIBUTION NETWORKS	3
Exams	3
Total hours: (equivalent to contact period)	
8. Grading System	

Quantifiable (letters) Not Quantifiable

9. Evaluation Strategies (Suggested): The faculty member teaching the course will provide the student with the evaluation strategy he/she will be using throughout the semester. This will be done within the first week of classes.

	Quantity	Percent
<input checked="" type="checkbox"/> Exams	3	60
<input checked="" type="checkbox"/> Final Exam	1	28
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographies		
<input type="checkbox"/> Portfolio		
<input checked="" type="checkbox"/> Projects	1	12
<input type="checkbox"/> Journals		
<input type="checkbox"/> Other, specify:		
TOTAL:		100%

10. Bibliography:

Palais, J. Fiber Optics Communications, 5th Edition, John Wiley and Sons.
 Optical Fiber Communications principles and practices John M. Senior, Prentice Hall
 Optical Fiber Communications Gerd Keiser 2nd edition, McGraw Hill

11. According to Law 51

Students will identify themselves with the Institution and the instructor of the course for purposes of assessment (exams) accommodations. For more information please call the Student with Disabilities Office which is part of the Dean of Students office (Chemistry Building, room 019) at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

12. Contribution of Course to meeting the requirements of Criterion 5:

Math	Basic Science	General	Engineering Topic
			√

13. Course Outcomes

Map to Program Outcomes

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|--|-----|
| 1. Learn the application of fiber optics in communications | (a) |
| 2. | |
| 3. Ability to use optics and trace correctly a ray through them | (a) |
| 4. Ability to analyze and understand how ray and wave theories can be used to explain the behavior of light in a fiber | (b) |
| 5. Know the functioning of integrated optics | (a) |
| 6. Understand the functioning of different fibers as communication waveguides. | (a) |
| 7. Ability to determine the data rate in different types of fibers | (b) |
| 8. Know how the light sources (lasers) work and how they can be modulated either in a digital or analog format. | (b) |
| 9. Know how different light detectors work | (a) |
| 10. Ability to design a complete optical fiber system for a given data rate | (k) |
| 11. Learn to use optical devices such as directional couplers, star couplers, etc. to create an optical distribution network | |

Person(s) who prepared this description and date of preparation: Hamed Parsiani. Submitted by: Miguel Vélez, Julio 07.