Jordan University of Science and Technology

Faculty of Engineering

Electrical Engineering Department

EE555 Optical Fiber Communication Systems

First Semester 2022-2023

Course Catalog
3 Credit Hours. Advantages, classifications, and applications of optical fiber communication systems; structure of step index and graded index fibers, propagation of light waves in optical fibers, attenuation and dispersion in optical fibers, types and characteristics of light sources, types and characteristics of photodetectors, noise in the optical receiver, receiver sensitivity, direct and heterodyne detection, analog and digital signal transmission.

Text Book	
Title	Optical Fiber Communications, .
Author(s)	G. Keiser,
Edition	4th Edition
Short Name	text
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
ref 1	Fiber-optic Communication Systems	G. Agrawal	2nd Edition	
ref 2	2- Optical Fiber Communications	J. Senior	2nd Edition	

Instructor	
Name	**Prof. Mansour Abu Shreea**
Office Location	E1L2
Office Hours	Sun : 10:30 - 12:30 Mon : 10:30 - 12:30 Tue : 10:30 - 12:30 Thu : 10:30 - 12:30
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Class Schedule & Room
Section 1: Lecture Time: Sun, Tue, Thu : 09:30 - 10:30 Room: C2011

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
245511	EE551A Digital Communications	Prerequisite / Study
243071	EE307 Electromagnetic (2)	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Overview of optical fiber communications.	From **text**
Weeks 2, 3, 4	Optical fibers: structures, types, propagating modes, materials, and fabrication methods.	From **text**
Weeks 5, 6	Optical fibers: attenuation, dispersion, dispersion compensation fibers, and fiber-fiber coupling.	From **text**
Weeks 7, 8	Optical sources: semiconductor lasers, light emitting diodes, and power launching & coupling.	From **text**
Weeks 9, 10, 11	photodetectors: p-i-n photodiodes, avalanche photodiodes, and shot noise.	From **text**
Weeks 12, 13	Optical receivers: photodetectors, preamplifiers, filters, and noise sources	From **text**
Weeks 14, 15	Optical fiber communication ystem: design and performance of digital links	From **text**

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Knowing the advantages, and the role of optical fiber communication systems in communication networks. [1ABET1, 1ABET2]	10%	first Exam
Understranding the structures, types, propagating modes, materials, and fabrication methods of optical fibers. [1ABET1, 1ABET2]	20%	first Exam, Quizzes and home works
understanding the attenuation and dispersion mechanisms in optical fibers and the design of dispersion compensation fibers. [1ABET1, 1ABET2]	20%	Quizzes and home works, second exam
Knowing the different types of optical sources used in optical fiber communication system and also the power launching & coupling methods. [1ABET1, 1ABET2]	20%	Quizzes and home works, Final Exam, second exam

Knowing the different types of photodetectors used in optical fiber communication systems and also the noise sources in optical receivers. [1ABET1, 1ABET2]	20%	Quizzes and home works, Final Exam
Able to design a digital link using optical fiber communication system. [1ABET1, 1ABET2]	10%	Final Exam

Relationship to Program Student Outcomes (Out of 100%)						
ABET1	ABET2	ABET3	ABET4	ABET5	ABET6	ABET7
50	50					

Evaluation	
Assessment Tool	**Weight**
first Exam	20%
Quizzes and home works	20%
Final Exam	40%
second exam	20%

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