

- c- 2 - Use computational facilities and techniques for optical design. (c- 5)
- c- 3 – Use appropriate tools to measure optical communication system performance.(c- 19)

d- General Skills

At the end of this course, the students will be able to:

- d- 1 - Refer to relevant literatures. (d-9)
- d- 2 - Develop skills related to creative and critical thinking as well as problem solving (d- 12)

4- Course Contents

No.	Topics	No of hours
1	Semiconductor materials for optical communications	3
2	Radiative Recombination mechanisms in semiconductors	3
3	Radiative Recombination mechanisms in semiconductors	3
4	Spectrum of emitted radiation from LEDs and Laser Diodes	3
5	Midterm	3
6	Modulation Characteristics of Light Sources	3
7	Modulation Characteristics of Light Sources	3
9	Optical Detectors	3
10	Optical Communication Link Design	3
11	Power Budget Considerations	3

5- Teaching and Learning Methods

- 5.1- Lectures
- 5.2- Class activity
- 5.3- Case study

6- Teaching and Learning Methods of Disables

- 6.1- Not Applicable

7- Student Assessment

a- Student Assessment Methods

1	Assignments to assess knowledge , practical and intellectual skills.
2	Quiz to assess knowledge and intellectual skills
3	Mid-term exam to assess knowledge and intellectual skills.
4	Oral Exam to assess knowledge skills, intellectual skills , Professional Skills and general skills
5	Final exam to assess knowledge, intellectual and practical skills

b- Assessment Schedule

No.	Assessment	Week
1	Assessments	3,9,11
2	Quizzes	4,7,10,12
3	Mid-term exam	8
4	Oral Exam	14

5	Final exam	15
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c- Weighting of Assessments

Assessment	Weight
Midterm Examination	20 %
Final Term Examination	60 %
Oral Examination	10 %
Practical Examination	0 %
Semester work	10 %
Other types of assessment	0 %
Total	100 %

8- List of References

a- Books

- 1- "Fiber-Optic Communication Systems" Third Edition, GOVIND P. AGRAWAL, John Wiley & Sons, Inc. , 2004
- 2- W. K. Pratt, "Laser Communication Systems", Wiley, New York , 1969
- 3- L. Kazovsky, S. Bendetto, and A. E. Willner, "Optical Fiber Communication Systems", Artec House, Norwood, MA, 1996

b- Recommended Books

- 1- G. Einarrson, "Principles of Lightwave Communication Systems", Wiley, New York. , 1996
- 2- N. Kashima, Passive Optical Components for Optical Fiber Transmission, Artec House, Norwood, MA , 1995

c- Periodical

- 1- IEEE Photon. Technol. Lett
- 2- J. Lightwave Technology
- 3- IEEE J. Quantum Electron.
- 4- IEEE J. Sel. Topics Quantum Electron.

Course coordinator Assoc. Prof. Dr.M. Lotfy Rabeh

Head of department: Prof. Dr. Sayed abo-Elswood Ward



Faculty of
Engineering at
Shoubra

Model No.11A Course Specifications : Optical Communication

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

Matrix of Knowledge and Skills of the course

Matrix of Knowledge and Skills of the course

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Semiconductor materials for optical communications	1	a1,a3	b2	c1	d1
2	Semiconductor materials for optical communications	2	a1,a3	b2	c1	d1
3	Radiative Recombination mechanisms in semiconductors	3	a1,a3	b2	c1	d1
4	Radiative Recombination mechanisms in semiconductors	4	a1,a3	b2	c1	d1
5	Spectrum of emitted radiation from LEDs	5	a2	b1, b2		
6	Spectrum of emitted radiation from Laser Diodes	6	a2	b1, b2		
7	Spectrum of emitted radiation from Laser Diodes	7	a2	b1, b2		
8	Mid-Term Exam	8				
9	Modulation Characteristics of Light Sources	9	a3,a5	b1, b2,b3	c1, c2,c3	d2
10	Optical Detectors	10	a3	b1, b2,b3	c1, c2,c3	d2
11	Basics of light propagation in Optical fibers	11	a2,a3	b1		d1
12	Basics of light propagation in Optical fibers	12	a2,a3	b1		d1
13	Optical Communication Link Design	13	a3,a4,a5	b1	c1, c2,c3	d2
14	Oral Exam	14				
15	Final exam	15				

Course coordinator: Assoc. Prof. Dr.M. Lotfy Rabeh

Course instructor Assoc. Prof. Dr.M. Lotfy Rabeh

Head of department: Prof. Dr. Sayed Ward

Matrix of course content and ILO's

Course Title: Optical Communications

Code: EC423

Lecture: 3

Tutorial: 2

Practical: -

Total:5

Program on which the course is given: B.Sc. Electrical Engineering (Communications)

Major or minor element of program: Major

Department offering the program: Electrical Engineering Department

Department offering the course: Electrical Engineering Department

Academic year / level: **Fourth** Year / **Second** Semester 2014-2015

Date of specifications approval: 20/6/2010

Course content	a1	a2	a3	a4	a5	b1	b2	b3	c1	c2	c3	d1	d2
Semiconductor materials for optical communications - Radiative Recombination mechanisms in semiconductors	✓		✓				✓		✓			✓	
Spectrum of emitted radiation from LEDs and Laser Diodes		✓				✓	✓						
Modulation Characteristics of Light Sources: LEDs and Laser Diodes			✓		✓	✓	✓	✓	✓	✓	✓		✓
Optical Detectors			✓			✓	✓	✓	✓	✓	✓		✓
Basics of light propagation in Optical fibers		✓				✓						✓	
Optical Communication Link Design	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓

Matrix of course aims and ILO's

Course Title: Optical Communications

Code: EC423

Lecture: 3

Tutorial: 2

Practical: -

Total:5

Program on which the course is given: B.Sc. Electrical Engineering (Communications)

Major or minor element of program: Major

Department offering the program: Electrical Engineering Department

Department offering the course: Electrical Engineering Department

Academic year / level: **Fourth** Year / **Second** Semester 2014-2015

Date of specifications approval: 20/6/2010

Course aims	a1	a2	a3	a4	a5	b1	b2	b3	c1	c2	c3	d1	d2
Semiconductor materials for optical communications - Radiative Recombination mechanisms in semiconductors	✓		✓			✓		✓		✓	✓	✓	✓
Assimilate Spectrum of emitted radiation from LEDs and Laser Diodes- Optical Detectors and fibers.		✓		✓	✓		✓		✓				
Describe the Design concepts of Optical Link and performance.			✓		✓	✓	✓		✓			✓	

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