



# Course Specifications

Institution: **College of Education.-Zulfy...**  
Academic Department : .....Physics.....  
Programme : ..... B.Edu Degree in Physics.  
Course : .....Optics  
Course Coordinator : .....s. alfahd.....  
Programme Coordinator : .....Dr. F.. Zahra.  
Course Specification Approved Date : 1/ 1 / 1438 H



## A. Course Identification and General Information

1 - Course title :	.....optics.....	Course Code:	. Phys 124.
2. Credit hours :	(3)		
3 - Program(s) in which the course is offered:	B.Edu Degree in Physics		
4 – Course Language :	.....Arabic.....		
5 - Name of faculty member responsible for the course:	. s. alfahd....		
6 - Level/year at which this course is offered :	.....2 <sup>nd</sup> ...level.....		
7 - Pre-requisites for this course (if any) :	<ul style="list-style-type: none"> <li>• .....non.....</li> </ul>		
8 - Co-requisites for this course (if any) :	<ul style="list-style-type: none"> <li>• .....Phys 123.....</li> </ul>		
9 - Location if not on main campus :	(.....)		
10 - Mode of Instruction (mark all that apply)			
A - Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	...80%...
B - Blended (traditional and online)	<input type="checkbox"/>	What percentage?	..... %
D - e-learning	<input type="checkbox"/>	What percentage?	..... %
E - Correspondence	<input checked="" type="checkbox"/>	What percentage?	...10 %
F - Other	<input checked="" type="checkbox"/>	What percentage?	...10 %
Comments :	.....		

## B Objectives

What is the main purpose for this course?  
 The benchmark statement of the main learning outcomes are as follows:

1. To understand basic Fundamentals of physical optics and its relation with basic science and modern technology.
2. The students should be trained on physical and generic skills (knowledge – cognitive – interpersonal – communication – problem solving – IT)
3. To describe, in words, the ways in which various concepts in optics come into play in particular situations; to represent these optical phenomena and its fields mathematically in those situations; and also to predict outcomes in other similar situations.





4. The day life applications in the domain of this course.
5. To analyze optical systems using a required basics

The main goal of this course is to use the scientific methods to understand the individual points of the course and its relation with the applied technology surrounding him.

Briefly describe any plans for developing and improving the course that are being implemented :

1. Explain strategy of the course in the beginning of the semester
2. Outlines of the physical laws, principles and the associated proofs.
3. Highlighting the day life applications whenever exist.
4. Encourage the students to see more details in the international web sites and reference books in the library.
- 5- Encourage the student to build an example of different experiments related to course and comparing it with experiments in the lab.

## C. Course Description

### 1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Waves theory of light: wave equation, sinusoidal waves, phase velocity, complex representation, and plane waves.	2.	6.
-Reflection and refraction of light: reflection and refraction laws, refraction by plane-parallel plate, total internal reflection and the critical angle.	.2.	6.
-Geometrical optics: mirrors, lenses, and prisms. -Superposition of waves: superposition principle, superposition of waves of the same frequency, standing waves, phase and group velocities, energy and power, random and coherent Sources.	2	.6.
-Interference: two-beam interference, Young's double-slit experiment, double-slit interference with virtual sources, interference in dielectric films, Newton's Rings.	2.	6.
-Optical Interferometry: Michelson, Mach-Zehnder, and Fabry-Perot interferometer.	2.	6.
-Polarization: Linear, circular, and elliptical polarization, production of	2.	6.





polarized light, double refraction (birefringence), optical activity, and photo elasticity.		
-Diffraction of light: types of diffraction, Fraunhofer diffraction by single slit, by double slit, and by many slits, rectangular and circular apertures, beam spreading, and resolution. Diffraction grating, grating equation, dispersion, types of grating and grating instruments..	<b>2</b>	<b>6</b>
Revesion	<b>1</b>	<b>3.</b>

## 2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
<b>Contact Hours</b>	..... <b>45</b> .....	.....	.....	.....	.....	.....
<b>Credit</b>	..... <b>45</b> .....	.....	.....	.....	.....	.....

## 3. Additional private study/learning hours expected for students per week.

.....non...

## 4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
<b>1.0</b>	<b>Knowledge</b>		
	Description of the knowledge to be acquired Learning basic fundamentals in physical optics. Understanding the physics of wave motion, superposition of waves, interference, diffraction, and polarization Improving logical thinking.	1- Demonstrating the basic information and principles through lectures and the achieved applications 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: a. Blackboard b. Power point 4. Discussions	1. Solve some example during the lecture. <b>2. Exams:</b> a) Quizzes b) Short exams (mid term exams) c) Long exams (final) d) Oral exams 3. Discussions with the students.





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	To use high mathematical formulation to describe the physical principle of different physical phenomena	5. Start each chapter by general idea and the benefit of it; 9. Learn the student background of the subject; 10. Show the best ways to deal with problem;	4. Ask the student to clear the misunderstanding of some physical principle and asking about quality question.
<b>2.0 Cognitive Skills</b>			
	1. How to use physical laws and principles to understand the subject 2. How to simplify problems and analyze phenomena 3. Analyze and explain natural phenomena. 4. Ability to explain the idea with the student own words. 5. Represent the problems mathematically.	1. Preparing main outlines for teaching 2. Following some proofs 3. Define duties for each chapter 4. Home work assignments 5. Encourage the student to look for the information in different references 6. Ask the student to attend lectures for practice solving problem 7. Doing small research..	1. Midterm's exam. Exams, short quizzes 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the course.
<b>3.0 Interpersonal Skills &amp; Responsibility</b>			
	1-The student work independently. 2. The students learn independently and take up responsibility.	1-Learn how to search the internet and use the library. 2. Learn how to cover missed lectures. 3. Learn how to summarize lectures or to collect materials of the course. 4. Learn how to solve difficulties in learning: solving problems – enhance educational skills. 5. Develop her interest in Science through :( lab work, field trips, visits to scientific and research. 6. Encourage the student to attend lectures regularly by: <ul style="list-style-type: none"> <li>▪ Giving bonus marks for attendance</li> </ul>	1. Quizzes on the previous lecture 2. Checking report on internet use and trips 3. Discussion 4. The accuracy of the result gained by each group will indicate good group work.
<b>4.0 Communication, Information Technology, Numerical</b>			



	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	1. Computation 2. Problem solving 3. Data analysis and interpretation	1. Know the basic mathematical principles. 2. Use the web for research. 3. Discuss with the student. 4. Exams to measure the mathematical skill. 5. Clear the weakness point that should be eliminated. 6. Encourage the student to ask for help if needed. 7. Computational analysis. 8. Data representation. 9. Focusing on some real results and its physical meaning. 10. Lectures for problem solution. 11. Encourage the student to ask good question to help solve the problem	1. Their interaction with the lectures and discussions. 2. The reports of different asked tasks. 3. Homework, Problem solutions assignment and exam should focus on the understanding. 4. Results of computations and analysis.
<b>5.0</b>	<b>Psychomotor</b>		
	The ability to run the hardware efficiently. - The ability to choose the appropriate tools and use them properly. - The skill of the operation , the use of computers and the means of modern technology..	practical training. - Method of simulation and modeling. - Research projects..	Practical applications Performance evaluation. - Practical tests

### 5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
<b>1</b>	<b>Attendance and Oral discussions</b>	From 2 <sup>ed</sup>	10%
<b>2</b>	<b>Quiz</b>	4 <sup>th</sup>	10%
<b>3</b>	<b>Mid term exam</b>	8 <sup>th</sup>	20%
<b>4</b>	<b>Final exam</b>	16 <sup>th</sup>	60%



## . Student Academic Counseling and Support

6 office hours per week

- Communicate, ask questions and inquiries through the site on the World Wide Web.

- To provide assistance and guidance to any inquiry or consulted regarding the article and given that

Include helping students understand the material and contribute to the process of academic guidance, And assist students in the face of any problems and academic scholarships in this cours.

## E. Learning Resources

### 1. List Required Textbooks :

-Introduction to Optics, by Frank J. Pedrotti, Leno M, Leno S. Pedrotti, 3<sup>rd</sup> ed. 2006, Publisher: Benjamin Cummings.

- Optics by Eugene Hecht, 4<sup>th</sup> ed. 2002, Publisher: Addison Wesley.

1- مقدمة في الضوء ، عبدالله الضويان و محمد الصالحي ، الطبعة الأولى 2009م ، الناشر جامعة الملك سعود

### 2. List Essential References Materials :

<http://www.physicsclassroom.com>

<http://www.learnerstv.com/>

### 3. List Recommended Textbooks and Reference Material :

- .....
- .....
- .....

### 4. List Electronic Materials :

- .....
- .....
- .....

### 5. Other learning material :

- .....
- .....
- .....





## **F. Facilities Required**

### **1. Accommodation**

- Lecture room for 30 students
- Library
- Laboratory for optics.

### **2. Computing resources**

- .....
- .....
- .....

### **3. Other resources**

- .....
- .....
- .....

## **G Course Evaluation and Improvement Processes**

### **1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:**

- Midterm and final exam.
- Quiz.

### **2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :**

- .....
- .....
- .....

### **3 Processes for Improvement of Teaching :**

- Course report
- Program report
- Program self study
- Fortification of the student learning.
- Handling the weakness point.

### **4. Processes for Verifying Standards of Student Achievement**

- 1- The instructors of the course are checking together and put a unique process of evaluation.
- 2- Check marking of a sample of papers by others in the department.
- 3- Feedback evaluation of teaching from independent organization

### **5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :**

- 1- The following points may help to get the course effectiveness







- Student evaluation
  - Course report
  - Program report
  - Program Self study
- 2- According to point 1 the plan of improvement should be given.
- 3- Contact the college to evaluate the course and the benefit it add to other courses.
- 4 -Add some subject and cut off others depending on the new discoveries in physics.

**Course Specification Approved**  
**Department Official Meeting No ( 2 ) Date 1 / 1 / 1437 H**

**Course's Coordinator**

**Name :** s. alfahd.  
**Signature :** .....  
**Date :** 20./ 12 / 1437 H

**Department Head**

**Name :** Dr.F.Zahra  
**Signature :** .....  
**Date :** 20./ 12 / 1437 H

