



<b>Faculty:</b> Faculty of Science	
<b>Department:</b> Physics	<b>Program:</b> Bachelor's Program
<b>Semester:</b> First semester	<b>Academic year:</b> 2023/2024

## Course Plan

### First: Course Information

<b>Course Name:</b>	Optics Laboratory		<b>Course No.</b> 0302297	
<b>Credit Hours:</b>	1 hrs	<b>Theoretical</b>	<b>Practical</b>	2
<b>Prerequisite:</b>	0302230	<b>Class Number:</b> 1	<b>Lecture Time:</b>	
<b>Level in JNQF</b>	7			
<b>Course Nature:</b>	<input type="checkbox"/> <b>Mandatory Faculty Requirement</b> <input type="checkbox"/> <b>Optional University Requirement</b> <input type="checkbox"/> <b>Mandatory University Requirement</b> <input type="checkbox"/> <b>Ancillary Course</b> <input type="checkbox"/> <b>Optional Specialty Requirement</b> <input checked="" type="checkbox"/> <b>Mandatory Specialization requirement</b>			
<b>Type of Education:</b>	<input checked="" type="checkbox"/> <b>Fully Direct (Fully Face-to-Face Education)</b> <input type="checkbox"/> <b>Integrated Education (2 Face-to-Face + 1 Asynchronous)</b> <input type="checkbox"/> <b>Electronic Education Fully (1 Asynchronous + 2 Synchronous)</b>			

### Second: Instructor's Information

<b>Course coordinator</b>		
<b>Name:</b>	<b>Office Number:</b>	<b>Email:</b>
<b>Instructor</b>		
<b>Name:</b>	<b>Office Number:</b>	<b>Email:</b>
<b>Office Hours:</b>		

### Third: Short Description of the Course

covers the fundamental properties of light propagation and interaction with matter under the approximations of geometrical optics and scalar wave optics. : In this lab, the student performs several typical experiments in optics, such as Inverse square law, Mirror and lenses, Refraction of light-prism, Diffraction of light by transmission, Polarization of light, Newton's Rings, Balmer series of Hydrogen and Diffraction by reflection, Fresnel's Mirrors and Michelson interferometer.

### Fourth: Course objectives

Empty box for course objectives.

## Fifth: Learning Outcomes

<i>Level descriptor according to (JNQF)</i>	<i>CILOs Code</i>	<i>CILOs</i> If any CILO will not be assessed in the course, mark NA.	<i>Associated PILOs Code</i> <i>Choose one PILO for each CILO*</i>	<i>Assessment method**</i> <i>Choose at least two methods</i>	<i>Scores out of 100</i> State the total score identified for each CILO	<i>Minimum acceptable Score/percentage (%)</i> <i>The percentage should not be less than 50% ***</i>
<b>Knowledge</b>	<b>K1</b>	<ul style="list-style-type: none"> <li>- Use the principles of polarization and diffraction, geometrical optics in the paraxial approximation.</li> <li>- Diffraction using a lens, Diffraction from rectangular apertures, reflection and refraction at a plane boundary applying Huygens' principle and Fermat's principle and Snell's Law</li> </ul> Use, graphical and algebraic tools to analyze the problem.	<b>P. K1</b>	Midterm exam Final exam	34	17 (50%)
	<b>K2</b>	<ul style="list-style-type: none"> <li>- To learn some typical applications for optics instruments</li> <li>- To learn some typical application for lenses and mirrors</li> </ul>	<b>P. K1</b>	Midterm exam Final exam	36	18 (50%)
	<b>K3</b>	Use words, diagrams, graphs and mathematics to communicate the experimental model.	<b>P-K3</b>	Midterm exam Final exam		
	<b>K4</b>	Identify all the relevant model limitations including idealization in the specific details.	<b>P-K4</b>	Midterm exam Final exam		
<b>Skills</b>	<b>S1</b>	Identify experimental errors and know how to calculate it.	<b>P. S1</b>	Midterm exam Quiz	10	5 (53%)

	<b>S2</b>	Formulate plans designed to achieve maximum useful of advanced experiments				
	<b>S3</b>	Use the computer for analyzing and processing the experimental data				
	<b>S4</b>	Make predictions that ca be compared with data as it is acquired during the experiment.	<b>P. S1</b>	Quiz Final	10	5 (50%)
	<b>S5</b>	Analyze data and give suggestion to improve the et up of experiments.				
<b>Competencies</b>	<b>C1</b>	Justify and explain thinking of optics experiments, in either written or oral form	<b>P. C3</b>	Assignment Final exam	10	5 (50%)
	<b>C2</b>	Develop new techniques to demonstrate optical experimental problems.				
	<b>C3</b>	Explain how optics developed communications and information systems.				
	<b>C4</b>					
	<b>C5</b>					

\*Refer to document (CC-2023-02) and page 2 in document (CC-2023-01)

\*\* Refer to document (CC-2023-05)

\*\*80% of the students must achieve the minimum acceptable percentage or higher for each CILO

## Sixth: Learning Source

<b>Designated Book:</b>	Manual: Optics Lab		
<b>Author:</b>	<b>Print:</b> 6 <sup>th</sup> edition	<b>Year:</b> 2010	
<b>Additional Sources:</b> <b>Website:</b>			
<b>Teaching Type:</b>	<input type="checkbox"/> Classroom <input checked="" type="checkbox"/> Laboratory <input type="checkbox"/> Workshop <input type="checkbox"/> MS Teams <input checked="" type="checkbox"/> Moodle		

## Seventh: Course Structure

Lecture Date	Topics	Teaching Procedures*	Teaching Methods**	Covered CILOs	References***
8/3/2023	Safety notes	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2	
15/3/2023	Inverse square law	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,C1;C2;	Pages 1-2
22/3/2023	Mirror and lenses	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,S4;S5;	62-67
29/3/2023	Refraction of light – prism	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,	67-71
5/4/2023	Diffraction of light- Diffraction grating	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2, S1,S3;C1,C2	75-78
12/4/2023	Polarization of light –Mauls law	Direct teaching	Lecturing Discussion Whiteboard Power point	S1,S3;C1,C2	84-86
19/4/2023	Newton's Rings	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,S4;S5;C1,C2	18-19 34-38

26/4/2023	Diffraction by reflection-CD	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,S4;S5	
3/5/2023	Balmer series of Hydrogen	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S2,S4;S5;C1,C2	202-204
10/5/2023	Michelson Interferometer	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,S5;C1,	211-218
17/5/2023	Faraday Effect	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,S4;S5;C1,C2	353-359
24/5/2023	Kerr Effect	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,S4;S5;C1,C2	406-413
31/5/2023	Compensation lab	Direct teaching	Lecturing Discussion Whiteboard Power point	K1,K2,S1,S3,	406-413
Final Exam					

Education procedures: (Direct, synchronous, asynchronous). \* \* Refer to document (CC-2023-04) \*\*\*Reference: Pages of the book, number of the chapter, recorded lecture, video....)

## Eighth: Assessment methods

Methods	Fully Electronic Education	Integrated Teaching	Direct Teaching	Specific Course Output to be measured										
				*State the score identified for each CILO for each method of assessment out of 100 **If any CILO will not be assessed in the course, mark NA.										
				K1	K2	S1	S2	S3	S4	C1	C2	C3	C4	C5
<b>Mid-term Exam</b>			<b>35</b>	<b>15</b>	<b>15</b>	<b>5</b>								
<b>Final Exam</b>			<b>50</b>	<b>19</b>	<b>21</b>				<b>5</b>	<b>5</b>				
<b>Quiz1</b>			<b>5</b>			<b>5</b>								
<b>Quiz2</b>			<b>5</b>						<b>5</b>					
<b>Assignment</b>			<b>5</b>							<b>5</b>				
<b>Total out of 100</b>			<b>100</b>	<b>34</b>	<b>36</b>	<b>10</b>			<b>10</b>	<b>10</b>				

\* Refer to document (CC-2023-03)

## Ninth: Course Policies

- Meeting the deadline for the lecture.
- Commitment to interaction and participation.
- Interactive lectures will be given through a platform (MS Teams).
- Duties and tests will be given through a platform (Moodle).
- Commitment to the right appearance with the proper background in front of the camera.
- University regulations for attendance and absence from lectures and examinations are in force.
- Academic Integrity: According to university regulations and instructions, fraud or moral impersonation is unacceptable and punishable.

Approval	Name	Date	Signature
Head of Department	Dr. Riad		
Faculty Dean	Dr. Aliaa Burqan		