QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ physics Department

Study plan No.	2021/2022		**University Specialization**		Bachelor of physics		
Course No.	0150211		**Course name**		Physics of Optics		
Credit Hours	3		**Prerequisite/ Co-requisite**		General Physics 2		
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	☐ UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	☐ Support course family requirements	✓ **Mandatory requirements**	☐ Elective requirements	
Teaching style	☐ Full online learning		✓ **Blended learning**		✓ Traditional learning		
Teaching model	☐ 1 Synchronous: 1 asynchronous		✓ **2 face to face : 1 asynchronous**		✓ 2 Traditional		

Faculty member and study divisions' information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Dr. Bashar S. Aljawarneh	Assistant Professor	129	429	BasharAljawarneh@gmail.com B. Aljawarneh @zuj.edu.jo	
Division number	**Time**	**Place**	**Number of students**	**Teaching style**	**Approved model**
1	[12:30 - 02:00] M, W	9145	12	**Blended learning**	1:2

Brief description

Short repetition of basic concepts within wave physics, mechanical/acoustical waves: superposition, standing waves. Electromagnetic waves and optics: reflection, refraction, dispersion, phase and group velocity, Geometrical optics, optical instruments. Polarisation. Fraunhofer and Fresnel diffraction.

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	Introduction to Optics, 3rd Edition, by Pedrotti. Publisher: Prentice Hall			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	Physics for Scientists and Engineers Authors: R. A. Serway and J. W. Jewett Publisher Science and Math.			
Supporting websites				
The physical environment for teaching	✓ Class room	☐ labs	✓ Virtual educational platform	☐ Others
Necessary equipment and software				
Supporting people with special needs				
For technical support				

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ physics Department

Course learning outcomes (S= *Skills, C= Competences K= Knowledge,)*

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	**Define** and illustrate the physical concepts and terminology used in optics and to be able to explain them in appropriate detail.	**MK 1**
K2	**Express** the concepts of the reflection, refraction.	**MK 4**
K3	**Record** the formulas of optics and wave physics using course literature.	**MK 2**
	Skills	
S1	**Apply** the skills allowing the student to identify and apply formulas of optics and wave physics using course literature.	**MS 1**
S2	**Comprehend** a solution to a physics problem in a clear and logical written form	**MS 3**
S3	**Drive** physics laws.	**MS 3**
	Competences	
C1	**Cooperate** to work effectively in the group assignments.	**MC 1**
C2	**Show** responsibility for self-learning to be aware with recent developments in physics.	**MC 4**

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm exam	30%	**30%**	40%	30%
Participation / practical applications	0	**0**	10%	30%
Asynchronous interactive activities	30%	**20%**	0	0
Final exam	40%	**50%**	50%	40%

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1, 2	Nature of Light.	Lecture	1 – 15 Ref. 1
3, 4, 5	Geometrical Optics	Lecture	16 – 49 Ref. 1
6, 7	Optical Instrumentation	Lecture	50 – 93 Ref. 1
7	**Review and Mid-Term Exam**	Lecture	
8, 9	Wave equation.	Lecture	94- 112 Ref. 1
10, 11, 12	Superposition of waves	Lecture	113- 130 Ref. 1
13, 14, 15	Interference, Diffraction and Polarization	Lecture	163 – 189 Ref. 1
16	**Review and Final Exam**		

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ physics Department

Schedule of asynchronous interactive activities (in the case of e-learning and blended learning)

Week	Task / activity	Reference	Expected results
1.	Background	Nature of light	Self-reading and Discussion
2.	Video 1 Solving exercises	E-learning	Discussion in the class
3.	Assignment 1: On the subjects studied on the first three weeks	(Lecture notes and Ref.1)	Submit a pdf or word sheet
4.	Quiz 1	On the subjects studied on the first three weeks	Submitting on the E-learning
5.	Video 2	Solving exercises	Discussion in the class
6.	Assignment 2: On the subjects studied in the weeks 4 and 5	(Lecture notes and Ref.1)	Submit a pdf or word sheet
7.	Self-reading	Index of reflection . (Ref.1)	Talk
8.	Video3 : Solving exercises	E-learning	Discussion in the class
9.	Video 4 : Revision	E-learning	Video
10.	midterm exam	-	-
11.	Assignment 3: On the subjects studied in the weeks 6 and 7	(Lecture notes and Ref.1)	Submit a pdf or word sheet
12.	Quiz 2	On the subjects studied on the subject studied after midterm exam	Submitting on the E-learning
13.	Presentation	Internet sources and the reference book	Video
14.	Video 5 Revision of all the course	E-learning	Video
15.	Assignment 1: On the subjects studied in the weeks 8 and 9	(Lecture notes and Ref.1)	Submit a pdf or word sheet
16.	**Final Exam**	-	