



Ministry of Higher Education and
Scientific Research - Iraq
University of Warith Al-Anbiyaa
College of Sciences
Department of Medical Physics



MODULE DESCRIPTION FORM

Module Information				
معلومات المادة الدراسية				
Module Title	Optics	Module Delivery		
Module Type	Core	Method	h/week	Frequency
Module Code	MPH2022	Theory	2	14
ECTS Credits	6 ECTS	Lecture	Choose an item.	Choose an item.
SWL (hr/sem)	150	Lab	2	15
		Tutorial	Choose an item.	Choose an item.
		Practical	Choose an item.	Choose an item.
		Seminar	Choose an item.	Choose an item.
Module Level	UG II	Semester of Delivery	3ed Semester	
Administering Department	MPH	College	CoS	
Module Leader	Shaima Hussein Nofal Hamad	e-mail	shaymaa@uowa.edu.iq	
Module Leader's Acad. Title	Assistant Professor Dr	Module Leader's Qualification	Ph.D.	
Module Tutor	Ali Nazem Nayef	e-mail	Ali.n@uowa.edu.iq	
Name		e-mail		
Scientific Committee Approval Date	Click or tap to enter a date.	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	None
Co-requisites module	None	Semester	None



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1- Identify the meaning of optics.2- Identify the refractive index, optical path, critical angle, total internal reflection,3- medical applications of light, as well as defining interference, diffraction, and polarization.4- Determine the importance of light in the medical field.5- Identify thin and thick lenses and study image formation.6- Study the tools related to these phenomena and determine the components of the images formed.7- Studying optical devices, focusing on the human eye, and paying attention to visual defects.8- Learn about the diffraction experiment, Newton's rings, Lloyd's mirror.9- Fraunhofer diffraction, Fresnel diffraction, and prism diffraction.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1- Know about the Nature and propagation of light, And electromagnetic spectrum2- Know about the Optical path of light in the optical mediums and Reflection And low.3. Know about the refraction at spherical surface.4. Know about the Critical angle, total internal reflection and Dispersion of light5- Know about the Mirrors and Magnification of images in mirrors6- Study the most important optical devices that can be used during their employment.7- Learn about the diffraction experiment.8 - Study thin Lenses and Lens maker's equation.9- Providing scientific material that relates to the scope of their work and is specialized as a medical physics department.
<p>Indicative Contents المحتويات الإرشادية</p>	<p><u>Theory Lectures</u> Learning concepts of each theoretical lecture or groups of lectures. [SSWL= 28hrs]</p> <p><u>Lab. Lectures</u> Learning concepts of each laboratory lecture or groups of lectures. [SSWL=30 hrs]</p> <p>Mid Exam =1hrs</p> <p><u>Final Exam =3hrs</u></p> <p>Total hrs = 62</p>

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Nature and propagation of light, And electromagnetic spectrum.
Week 2	Optical path of light in the optical mediums and Reflection
Week 3	Optical path of light in the optical mediums and Reflection
Week 4	Critical angle , total internal reflection and Dispersion of light
Week 5	Mirrors and Magnification of images in mirrors
Week 6	Thin Lenses and Lens maker's equation
Week 7	Mid. Exam
Week 8	Compound lenses and equivalent focal length
Week 9	Optical Devices, The eye, defect of visions,
Week 10	The Human Visual System, eye diseases.
Week 11	Transverse wave, The wave equation in the medium , Superposition of Waves and Coherent and incoherent sources, Relation between Phase Difference and Path Difference
Week 12	thin film, HOLOGRAPHIC TECHNOLOGY, Interference phenomena, Young's Experiment and Intensity Distribution in the Young's Experiment.
Week 13	Diffraction Phenomena and types of diffractions ,Fraunhofer diffraction and Single Slit Diffraction (Fraunhofer Diffraction)
Week 14	Double-Slit Diffraction Pattern and Diffraction
Week 15	Grating and Dispersion power of grating and Resolving Power.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Finding the focal length of a convex lens
Week 2	Measurement of diameter of wire using laser diffraction
Week 3	Measurement the refractive index of a liquid by refractometer
Week 4	Laser Diffraction
Week 5	Find the refractive index for prism using spectrometer
Week 6	Polarimeter
Week 7	Find the focal length for a concave lens by using convex lens
Week 8	find the specific rotation of sugar solution by using a polarimeter and sugar solutions of different concentrations.
Week 9	measurement of the wavelength of monochromatic light using the laser.
Week 10	Study solution concentration using Beer – Lamber.
Week 11	Brewster angle measurement.
Week 12	Study the phenomenon of diffraction via grating.
Week 13	find the focal length for a concave lenses.
Week 14	Laser Diffraction
Week 15	Finding the focal length of a convex lens

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamental of Optics, by Jenkins and White	No
Recommended Texts	Introduction to Modern optics, by Grant R. Fowllles Optics, by Miles and Thomas ear, Publisher.	No
Websites	https://phet.colorado.edu/ar_SA/ https://michaelbach.de/ot/ https://science.nasa.gov/ems/09_visiblelight https://w3.aapm.org/media/index.php https://phet.colorado.edu/sims/html/geometric-optics/latest/geometric-optics_all.html?locale=ar_SA	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.