

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Medical physics		Module Delivery	
Module Type	Support		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MIE12202			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	UG1	Semester of Delivery		2
Administering Department	MIE	College	MUC	
Module Leader	Athraa Ali Hussein		e-mail	athraa.ali@muc.edu.iq
Module Leader's Acad. Title	Assist. lecturer	Module Leader's Qualification	M.Sc.	
Module Tutor		e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	8/11/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1- to recognize the influence of forces on the human body Identify how the skeleton works 2- to show how pressure affects the body's organs Recognize physical activity of the lungs and breathing 3- to demonstrate the physics of the cardiovascular system and the urinary system 4- to distinguishes the basic principles using the applications of electricity and magnetism in medicine 5- to shall be acquainted with respiratory, cardiovascular and cardiovascular equipment 6- to distinguishes the basic principles, using the sound waves in medicine and the use of x-rays in the diagnosis and identification of diseases
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1- Understand the difference between the Forces. 2- Know the bone has at least six functions. What are the main components of the bone, and to study the methods of Measurement the minerals quantity in the bone 3- know methods of diathermy 4- understand how Energy change in the body 5- know pressures inside the body parts and measure it 6- understand how to work the lungs and How the blood and lungs interact 7- know nervous system and the neuron 8- know the graphing devices of the body organs 9- know the applications of Electricity and Magnetism in Medicine 10- know the application of sound in medicine, know sonar devices 11- know the application of light and laser in medicine 12- know Major components of the cardiovascular system 13- know physics of nuclear medicine 14- know the x- ray device
Indicative Contents المحتويات الإرشادية	1- Define the Forces , Frictional Forces , Dynamics (5hrs) 2- functions of the skeleton and Bone consists of quite different materials and how to measure mineral in the bones (5 hrs) 3- Types of thermometers , Heat therapy, Cryogenics (5 hrs) 4- Sphygmomanometer, blood pressure, bladder pressure , tonometer(4hrs) 5- Function of Lungs & Breathing, breath rate, airways, Dalton's law of partial pressures(3hrs) 6- The nervous system and the neuron, Electrocardiogram, Electro retion gram (ERG), The magneto cardiogram (MCG)(4hrs)

	7- Magnetic signals from the heart –magneto cardiogram(3hrs) 8- Macro shock, Micro shock (3hrs) 9- General Properties of Sound, Acoustic Impedance, Absorption, A-mode Display, Doppler Ultrasound(5hrs) 10- Endoscope, cystoscopes, Emissive IR photography. (5hrs) 11- Laser, population inversion, X-ray (6hrs) 12- Physics of the cardiovascular system (5 hrs)
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Daily assessment - weekly assessment - quarterly assessment - objective questions - general questions - practical tests.

Student Workload (SWL)					
الحمل الدراسي للطلاب					
Structured SWL (h/sem)		64	Structured SWL (h/w)		4
الحمل الدراسي المنتظم للطلاب خلال الفصل			الحمل الدراسي المنتظم للطلاب أسبوعيا		
Unstructured SWL (h/sem)		61	Unstructured SWL (h/w)		4
الحمل الدراسي غير المنتظم للطلاب خلال الفصل			الحمل الدراسي غير المنتظم للطلاب أسبوعيا		
Total SWL (h/sem)		125			
الحمل الدراسي الكلي للطلاب خلال الفصل					
Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	4, 11	LO # 1-3 and 8-10
	Assignments	2	10% (10)	9, 13	LO # 8 and 11-12
	Projects / Lab.	7	10% (10)	Continuous	
	Report	2	10% (10)	7, 12	LO # 1-6 and 7-11
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	4 hr.	50% (50)	14	All

Total assessment	100% (100 Marks)		
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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Forces on and in the body.
Week 2	Physics of the skeleton.
Week 3	Heat & cold in medicine
Week 4	Energy, work and power of the body, Pressure in body organs
Week 5	Physics of the lungs and breathing.
Week 6	Physics of cardiovascular system
Week 7	Mid Term Exam
Week 8	Physics of urinary system.
Week 9	Electricity within the body.
Week 10	Sound in medicine and physics of hearing.
Week 11	Light in medicine and physics of vision.
Week 12	Diagnostic X-rays
Week 13	Physics of nuclear medicine (radioisotopes in medicine).
Week 14	Physics of radiation therapy+ Radiation protection
Week 15	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي المختبر	
	Material Covered
Week 1	Lab 1: Introduction to laboratory tools
Week 2	Lab 2: the simple pendulum
Week 3	Lab 3: hook's law
Week 4	Lab 4: the blood pressure
Week 5	Lab 5: the friction
Week 6	Lab 6: the speed of sound
Week 7	Lab 7: the laser
Week 8	Lab 8: viscosity of liquids
Week 9	Lab 9: The cylindrical body

Week 10	Lab 10: The convex lens
Week 11	Lab 11: the concave lens

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Recommended Texts	Introductory Physics I Elementary Mechanics by Robert G. Brown	NO
Websites	https://webhome.phy.duke.edu/~rgb/Class/intro_physics_1/intro_physics_1.pdf	

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 (فيد 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.