وازرة التعليم العالي والبحث العلمي جـــهاز

الإشـــراف والتقـــويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الاكاديمي للعام الدراسي ٢٠٢٤_٢٠٢٥ للكليات والمعاهد

الجامعة : جامعة شط العرب الاهلية

الكلية /المعهد : الكلية التقنية الهندسية

القسم العلمي : قسم هندسة تقنيات الأجهزة الطبية

تاريخ ملء الملف : 2025/8/4

التوقيع :

اسم رئيس القسم : د. هناء نبيل حسين

التاريخ : 2025/8/4

التوقيع :

اسم المعاون العلمي: أ.د. كامل حسين السوداني

التاريخ : 4/8/2025

الاستاذ الدكتور
كامل حسين السوداني
كيمياء تحليلية

الكلية التقنية الهندسية
اللجنة الامتحانية
هندسة تقنيات الاجهزة الطبية

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: التاريخ

/ /

التوقيع

مصادقة السيد العميد

أ.م.د. مازن عبدالاله علوان

عميد الكلية التقنية الهندسية

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	**MIET1202**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UG1		**Semester of Delivery**	2	
Administering Department	MIET		**College**	EETC	
Module Leader	Mayss alreem Nizar hammed		**e-mail**	Mayssalreem92@mtu.edu.iq	
Module Leader's Acad. Title	Assist. lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor			**e-mail**		
Peer Reviewer Name	Prof Dr. Jinan Fadhil Mahdi		**e-mail**	Jinan.f@mtu.edu.iq	
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)

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 للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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)		

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 للمختبر	
	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 (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.