

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>Physics</b>		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	<b>CIV11205</b>		
ECTS Credits	5		
SWL (hr/sem)	<b>200</b>		
Module Level	1	Semester of Delivery	7
Administering Department	Civil Engineering	College	Al-Mansour University Colloge
Module Leader	Dr. Lubna Abdulrahman	e-mail	lubna.abdulrahman@muc.edu.iq
Module Leader's Acad. Title	Lectrure	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	
Peer Reviewer Name	Name	e-mail	
Scientific Committee Approval Date	01/09/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Physics	Semester	5&6
Co-requisites module	None	Semester	

<b>Module Aims, Learning Outcomes and Indicative Contents</b> <b>أهداف المادة الدراسية ونواتج التعلم والمحتويات الإرشادية</b>	
<b>Module Objectives</b> <b>أهداف المادة الدراسية</b>	<ol style="list-style-type: none"> <li>1. To develop problem solving skills and understanding of physics theory through the application of techniques.</li> <li>2. To understand acquires knowledge and special skills in physics.</li> <li>3. This course deals with the basic concept of physics.</li> <li>4. To analyze simple geometric shape and structures and find results using the relevant theories.</li> </ol>
<b>Module Learning Outcomes</b> <b>مخرجات التعلم للمادة الدراسية</b>	<p>The intended subject specific learning outcomes. On successfully completing the module students will be able to:</p> <ol style="list-style-type: none"> <li>1. Demonstrate an assured ability to identify relevant principles and laws when dealing with physics problems.</li> <li>2. To make approximations necessary to obtain solutions. Confidently solve problems in physics using appropriate mathematical tools.</li> <li>3. To Present and interpret scientific information graphically to solve complex problems.</li> <li>4. To communicate scientific information about problem solving, in particular to produce clear and accurate scientific reports.</li> </ol>
<b>Indicative Contents</b> <b>المحتويات الإرشادية</b>	<p>The field of physics encompasses a wide range of topics and concepts. Here are some indicative contents for physics:</p> <ol style="list-style-type: none"> <li>1. Classical Mechanics: <ul style="list-style-type: none"> <li>• Newton's laws of motion</li> <li>• Conservation laws (e.g., conservation of energy, momentum)</li> <li>• Circular motion and gravitation</li> <li>• Work, energy, and power</li> <li>• Simple harmonic motion</li> <li>• Fluid mechanics [15 hr]</li> </ul> </li> <li>2. Thermodynamics: <ul style="list-style-type: none"> <li>• Laws of thermodynamics</li> <li>• Heat transfer and thermal equilibrium</li> <li>• Entropy and the second law of thermodynamics</li> <li>• Thermodynamic processes (e.g., isothermal, adiabatic) [10 hr]</li> <li>• Quantum mechanical operators (e.g., position, momentum)</li> <li>• Quantum harmonic oscillator</li> <li>• Atomic and molecular structure</li> <li>• Simulations and modeling</li> <li>• Data analysis and visualization [15]</li> </ul> </li> </ol>

<b>Learning and Teaching Strategies</b> <b>استراتيجيات التعلم والتعليم</b>	
<b>Strategies</b>	<p>Learning and teaching strategies for physics can vary depending on the level of education and the specific needs of the learners. Here are some effective strategies for learning and teaching physics:</p> <ol style="list-style-type: none"> <li>1. Hands-on Experiments and Demonstrations: <ul style="list-style-type: none"> <li>• Performing experiments and demonstrations allows students to actively engage with the concepts and principles of physics. It helps them visualize and understand abstract ideas.</li> <li>• Encourage students to design and conduct their own experiments, fostering critical thinking and problem-solving skills.</li> </ul> </li> <li>2. Problem-Solving Approach: <ul style="list-style-type: none"> <li>• Physics is a problem-solving discipline. Emphasize the importance of practicing and solving physics problems regularly.</li> <li>• Teach problem-solving strategies, such as identifying given information, selecting appropriate equations, and analyzing the problem step by step.</li> <li>• Provide a variety of problem-solving exercises, including both theoretical and real-world applications.</li> </ul> </li> <li>3. Conceptual Understanding: <ul style="list-style-type: none"> <li>• Focus on building a strong conceptual foundation. Help students develop a deep understanding of fundamental concepts and their interrelationships.</li> <li>• Use analogies, real-life examples, and visual aids to illustrate abstract concepts and make them relatable.</li> <li>• Encourage discussions and questions to clarify misunderstandings and promote critical thinking.</li> </ul> </li> </ol>

<b>Student Workload (SWL)</b> <b>الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا</b>			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	63	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	4
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.4
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>200</b>		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #4
	Assignments	5	15% (15)	2, 7 and 12	LO #3, #4
	Projects / Lab.	5	10% (10)	2,4,6,8 and 10	All
	Report	5	5% (5)	2,4,6,8 and 10	LO #1, #3 and #4
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to vectors
Week 2	Introduction to vectors
Week 3	Uniformly accelerated motion
Week 4	Uniformly accelerated motion
Week 5	Newton's law
Week 6	Newton's law
Week 7	Mid-term Exam
Week 8	Equilibrium under the action of concurrent forces
Week 9	Equilibrium under the action of concurrent forces
Week 10	Equilibrium or a rigid body under coplanar forces
Week 11	Equilibrium or a rigid body under coplanar forces
Week 12	Energy and power
Week 13	Energy and power
Week 14	Impulse and momentum
Week 15	Impulse and momentum
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Experimental Measurements and Data Analysis
Week 2	Forces and Newton's Laws
Week 3	Conservation of Mechanical Energy
Week 4	Simple Harmonic Motion
Week 5	Electric Fields and Potentials
Week 6	Electric Circuits
Week 7	Fluids and Heat

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Theory and problem of College Physics , McGraw-Hill Education	Yes
Recommended Texts		
Websites	<a href="https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering">https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering</a>	

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
<b>Note:</b> 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.				