

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	General Physics		Module Delivery	
Module Type	Support or related learning activity		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	UOMU0208024			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	1	Semester of Delivery		2
Administering Department	CSET	College	TECAI	
Module Leader	Afyaa Saad Neamah		e-mail	<a href="mailto:afyaa.saad.neamah@uomus.edu.iq">afyaa.saad.neamah@uomus.edu.iq</a>
Module Leader's Acad. Title		Module Leader's Qualification	Assistant Lecturer	
Module Tutor		e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date		Version Number		

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

<b>Co-requisites module</b>	None	<b>Semester</b>	
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## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Aims</b> أهداف المادة الدراسية	<p>The aims of this subject are to:</p> <ol style="list-style-type: none"> <li>1. Provide, through well-designed studies of experimental and practical physics, a worthwhile educational experience for all students, whether they go on to study science beyond this level and to enable them to acquire sufficient understanding.</li> <li>2. Develop abilities and skills that are relevant to the study and practice of science and are useful in everyday life.</li> <li>3. Develop attitudes relevant to science such as concern for accuracy and precision, objectivity, integrity, etc.</li> <li>4. Stimulate interest in and care for the local and global environment.</li> <li>5. Promote an awareness that the study and practice of science are cooperative and cumulative activities and are subject to social, economic, technological, ethical, and cultural influences and limitations.</li> <li>6. The applications of science may be beneficial and detrimental to the individual, the community, and the environment.</li> <li>7. The use of information technology is important for communications, as an aid to experiments, and as a tool for the interpretation of experimental and theoretical results.</li> </ol>
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<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>The learning outcomes for studying general physics are:</p> <ol style="list-style-type: none"> <li>1. Understanding Fundamental Concepts: Students will develop a solid understanding of fundamental physics concepts, including physical quantities, units, and measurement, as well as key principles governing motion, forces, and energy.</li> <li>2. Problem-Solving Skills: By studying kinematics and dynamics, students will acquire the ability to analyze and solve problems related to motion, forces, and the behavior of physical objects.</li> <li>3. Conceptual Mastery: Students will master key concepts such as mass, weight, density, and the turning effect of forces, enabling them to apply these principles to real-world situations.</li> <li>4. Pressure, Energy, Work, and Power: Learners will gain a comprehensive understanding of pressure, energy, work, and power and be able to calculate and apply these concepts to various physical systems.</li> <li>5. Motion in Different Dimensions: Students will be able to analyze and describe the motion of objects in one, two, or three dimensions, allowing them to tackle more complex real-world scenarios.</li> <li>6. Newton's Laws of Motion: Learners will comprehend and apply Newton's</li> </ol>
	<p>three laws of motion, providing them with the foundation for understanding and predicting the behavior of objects under the influence of forces.</p> <ol style="list-style-type: none"> <li>7. Understanding Wave Properties: Students will gain a deep understanding of the general properties of waves, including wave mechanics, wave interference, and wave behavior, which are vital in various areas of physics.</li> <li>8. Exploration of Light: A thorough understanding of the nature and properties of light, including its behavior, reflection, refraction, and dispersion, will be achieved.</li> <li>9. Electromagnetic Spectrum: Students will learn about the electromagnetic spectrum, its different regions, and the practical applications of various types of electromagnetic waves.</li> <li>10. Sound and Hearing: A comprehensive understanding of the physics of sound, including wave characteristics, propagation, and its perception by the human ear, will be attained.</li> <li>11. Electromagnetism: The course will enable students to understand the relationship between electricity and magnetism, including electromagnetic induction, electromotive force, and the applications of electromagnetism in technology.</li> </ol>

<b>Indicative Contents</b> المحتويات الإرشادية	Indicative content includes the following: 1- Measurements <ul style="list-style-type: none"> <li>- Introduction to Physical Quantities</li> <li>- Units and Measurement</li> </ul> 2- Newtonian Mechanics <ul style="list-style-type: none"> <li>- Kinematics</li> <li>- Dynamics, Mass</li> <li>- Weight and Density</li> <li>- Turning Effect of Forces</li> <li>- Pressure</li> <li>- Energy, Work and Power</li> </ul> 3- Waves <ul style="list-style-type: none"> <li>- General Wave Properties</li> <li>- Light</li> <li>- Electromagnetic Spectrum</li> <li>- Sounds</li> </ul> 4- Electricity and Magnetism <ul style="list-style-type: none"> <li>- Static Electricity &amp; Practical Electricity</li> <li>- Magnetism &amp; Electromagnetism</li> </ul>
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<b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعلي م	
<b>Strategies</b>	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

<b>Student Workload (SWL)</b> الحمل الدراسي للطالب			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3

<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125
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Module تقييم Evaluation المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1-4 and 5,6
	Assignments	2	10% (10)	2, 12	LO # 1, 2 and 9
	Projects / Lab.	8	15% (15)	Continuous	
	Report	1	5% (5)	13	LO # 10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	40% (50)	16	All
	Final Lab Exam	1hr	10% (10)	16	All
<b>Total assessment</b>			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
<b>Week 1</b>	<p><b>Introduction Physical Quantities, Unites and Measurement</b></p> <ul style="list-style-type: none"> <li>• Dimensions and Units</li> <li>• Dimensional Analysis</li> <li>• Conversion of Units</li> </ul>

<p><b>Week 2</b></p>	<p><b>Kinematics and Dynamics</b></p> <ul style="list-style-type: none"> <li>• Reference Frames and Displacement</li> <li>• Average Velocity</li> <li>• Instantaneous Velocity</li> <li>• Acceleration</li> <li>• Motion at Constant Acceleration</li> <li>• Freely Falling Objects</li>   <li>• Force and Motion</li> <li>• Collisions and Impulse</li> <li>• Projectile Motion</li> </ul>
<p><b>Week 3</b></p>	<p><b>Mass, weight and Density</b></p> <ul style="list-style-type: none"> <li>• Definition of Mass</li> <li>• Units and Law of Mass</li> <li>• Definition of Weight</li> <li>• Units and Law of Weight</li> <li>• Definition of Density</li> <li>• Units and Law of Density</li> <li>• Specific gravity</li> </ul>
<p><b>Week 4</b></p>	<p><b>Turning Effect of Forces</b></p> <ul style="list-style-type: none"> <li>• Moment of a Force</li> <li>• Principle of Momentum</li> <li>• Conditions of Equilibrium</li> </ul>
<p><b>Week 5</b></p>	<p><b>Pressure, Energy, Work, and Power</b></p> <ul style="list-style-type: none"> <li>• Definition of Pressure</li> <li>• Units and Law of Pressure</li> <li>• Pressure in Liquids</li> </ul>
	<ul style="list-style-type: none"> <li>• Definition of Energy</li> <li>• Units and Law of Energy</li> <li>• Kinetic energy</li> <li>• Potential Energy</li> <li>• Definition of Work</li> <li>• Units And Law Of Work</li> <li>• Definition of Power</li> <li>• Units and Law of Power</li> </ul>

<p><b>Week 6</b></p>	<p><b>Motion Along a Straight Line</b></p> <ul style="list-style-type: none"> <li>• Displacement, Time, and Average Velocity</li> <li>• Motion</li> <li>• Position and Displacement</li> <li>• Average Velocity and Average Speed</li> </ul>
<p><b>Week 7</b></p>	<p><b>Motion in Two or Three Dimensions</b></p> <ul style="list-style-type: none"> <li>• Position and Velocity Vectors</li> <li>• Acceleration Vector</li> <li>• Projectile Motion</li> </ul>
<p><b>Week 8</b></p>	<p><b>Newton's Laws of Motion</b></p> <ul style="list-style-type: none"> <li>• Newton's First Law</li> <li>• Newton's Second Law</li> <li>• Newton's Third Law</li> </ul>
<p><b>Week 9</b></p>	<p><b>Mid Term Exam</b></p>
<p><b>Week 10</b></p>	<p><b>General Wave Properties</b></p> <ul style="list-style-type: none"> <li>• Mechanical Waves</li> <li>• Transverse waves</li> <li>• Longitudinal waves</li> <li>• Surface waves</li> <li>• Measuring a Wave</li> </ul>
<p><b>Week 11</b></p>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Definition of Light</li> </ul>
	<ul style="list-style-type: none"> <li>• What is of Light</li> <li>• Properties of Light</li> <li>• Application of Light</li> </ul>

<b>Week 12</b>	<p><b>Electromagnetic Spectrum</b></p> <ul style="list-style-type: none"> <li>• Definition of Electromagnetic Spectrum</li> <li>• Type of Electromagnetic Spectrum</li> <li>• Detecting Electromagnetic Waves from Space</li> <li>• Energy in Electromagnetic Waves</li> </ul>
<b>Week 13</b>	<p><b>Sounds and Hearing</b></p> <ul style="list-style-type: none"> <li>• Definition of Sound and Hearing</li> <li>• Speed of Sound, Frequency and Wavelength</li> <li>• Sound Intensity and Sound Level</li> <li>• Definition of Hearing</li> <li>• The Hearing Mechanism</li> </ul>
<b>Week 14</b>	<p><b>Magnetism</b></p> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• The Source of All Magnetism</li> <li>• Universal Characteristics of Magnets and Magnetic Poles</li> <li>• Earth's Magnetic Poles</li> <li>• Types of Magnetism</li> </ul>
<b>Week 15</b>	<p><b>Electromagnetism</b></p> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Faradays Law</li> <li>• Emf induced in a moving conductor</li> <li>• Energy stored in a magnetic field</li> </ul>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Experiment 1: Dynamics – Force, Newton's Three Laws, and Friction
<b>Week 2</b>	Experiment 2: Investigating the Laws of Motion with a Simple Pendulum
<b>Week 3</b>	Experiment 3: Tuning Fork
<b>Week 4</b>	Experiment 4: Equilibrium of a Rigid Body
<b>Week 5</b>	Experiment 5: Determining Hooks law

<b>Week 6</b>	Experiment 6: Verifying Newton's Third Law with Colliding Objects
<b>Week 7</b>	Experiment 7: Investigating Wave Properties - Wavelength, Frequency, and Speed
<b>Week 8</b>	Experiment 8: Refraction of Light in Different Media

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	Fundamentals of Physics, by David Halliday, Jearl, Walker, and Robert Resnick, Wiley	
<b>Recommended Texts</b>	Serway, Physics for Scientists and Engineers 6E by Serway and Jewett	
<b>Websites</b>		

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