

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>Physics</b>		Module Delivery
Module Type	<b>Supportive</b>		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	<b>BME116</b>		
ECTS Credits	6		
SWL (hr/sem)	<b>48</b>		
Module Level	<b>1</b>	Semester of Delivery	
Administering Department		College	
Module Leader	Alaa	e-mail	E-mail
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Dr. Nebras H. Ghaeb	e-mail	<a href="mailto:nebras@kecbu.uobaghdad.edu.iq">nebras@kecbu.uobaghdad.edu.iq</a>
Scientific Committee Approval Date		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	<ol style="list-style-type: none"> <li>To understand the basic of physics in biomedical engineering such as mechanical, electrical, optics and thermal laws.</li> <li>To be able of solving problems through the application of knowledge of physic to biomedical engineering applications.</li> </ol>

	<ol style="list-style-type: none"> <li>To provide knowledge on different laws used to cover different physical life phenomena.</li> <li>The course deals with the basic of wave theory and electromagnetic radiation.</li> <li>Understanding the theory of electromagnetic waves and sounds.</li> <li>An introduction to the forces and fields through which particles of matter can interact, including electrostatic and magnetic fields.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>Understand the basic mechanics. With respect to the motion of one and two dimensions, and the static fluid equations.</li> <li>Understand the basic thermodynamic equations, and their use in the analysis of thermal systems.</li> <li>Understand the mechanical vibration behaviour and the vibration of sound simple theory and applications.</li> <li>Understand the basic electrical forces and energy equations with the electromagnetic general behaviour.</li> <li>Understand the general optics theory and the use of refractive and reflective equations with the simple mirror and optics.</li> <li>Understand general overview for the quantum physics.</li> </ol>
<b>Indicative Contents</b> المحتويات الإرشادية	<p>The Indicative content can be divided into five main types listed as follow:</p> <p><b><u>Part A: General Mechanics</u></b>  The general units used in definition different quantities. The simple mechanical equations used to calculate the motion in both one dimension and two dimensions such as Newton's equation of motion, the fluid in static condition and its pressure. [12 hrs]</p> <p><b><u>Part B: Thermodynamics</u></b>  What is the thermal system? The definition of temperature and thermal flux. The first and the second thermodynamic law and their applications on thermal system. [6 hrs]</p> <p><b><u>Part C: Vibration and Waves</u></b>  The vibration waves and propagation. The important properties that effect the wave of the vibrated matters. The sound as a pressure waves transmitted in vibrated media and its related theory. [6 hrs]</p> <p><b><u>Part D: Electricity</u></b>  The Electrical forces and their fields of effect. The Electrical energy and capacitance phenomena that work on store it. Magnetic field and how to describe and study. [9 hrs]</p> <p><b><u>Part E: Optics</u></b>  The general optical equations and their method of calculations with respect to the refractive and reflective behaviour of the light with the optics used. [9 hrs]</p>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	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 examples form real life application.
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### Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطلاب خلال الفصل	48	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطلاب أسبوعيا	3
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطلاب خلال الفصل	102	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطلاب خلال الفصل	150		

### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	4, 11	LO # 1-2 and 4-5
	<b>Assignments</b>	1	10% (10)	2, 12	LO # 6 and 7
	<b>Projects</b>	1	10% (10)	Continuous	All
	<b>Report</b>	1	10% (10)	13	LO # 4
<b>Summative assessment</b>	<b>Midterm Exam</b>	2	10% (10)	7	LO # 1-3
	<b>Final Exam</b>	3	50% (50)	16	All
<b>Total assessment</b>			<b>100% (100 Marks)</b>		

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered	
<b>Part 1: Mechanics</b>	
<b>Week 1</b>	Units, Trigonometry and vectors.
<b>Week 2</b>	Motion of one and two dimensions.
<b>Week 3</b>	Newton's Law of Motion.
<b>Week 4</b>	Fluids in statics.
<b>Part 2: Thermodynamics</b>	
<b>Week 5</b>	Thermal analysis and thermal process.
<b>Week 6</b>	Laws of thermodynamics.
<b>Week 7</b>	Mid – term exam.
<b>Part 3: Vibrations and waves</b>	
<b>Week 8</b>	Vibrations and waves.

Week 9	Sound.
<b>Part 4: Electricity and Magnetism</b>	
Week 10	Electrical forces and fields.
Week 11	Electrical energy and capacitance.
Week 12	Magnetism
<b>Part 5: Optics</b>	
Week 13	Reflection and refraction of light
Week 14	Mirrors and Lenses
Week 15	Quantum physics.
Week 16	Preparatory week before the final Exam

<b>Delivery Plan (Weekly Lab. Syllabus)</b> المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	Text	Available in the Library?
<b>Required Texts</b>	1. Raymond AS, Chris V, and John H, College Physics, 11 <sup>th</sup> edition, Cengage Learning, 2018.	No
	2. Medical physics and biomedical engineering, B H Brown, R H Smallwood, D C Barber, P V Lawford and D R Hose, British Library Cataloguing, IOP Publishing Ltd, 1999.	No
<b>Recommended Texts</b>		
<b>Websites</b>		

## Grading Scheme

### مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<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 (قيد 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.