



مدونة المناهج السعودية

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الموقع التعليمي لجميع المراحل الدراسية

في المملكة العربية السعودية

مختصر توصيف المقرر

(Course Information)

معلومات المقرر \*

اسم المقرر:	فيزياء الجسيمات الأولية
رقم المقرر:	فيز 4832
اسم ورقم المتطلب السابق:	فيز 3812
اسم ورقم المتطلب المرافق:	--
مستوى المقرر:	السابع
الساعات المعتمدة:	3 (0+0+3)
<b>Module Title:</b>	Elementary Particles Physics
<b>Module ID:</b>	PHYS 4832
<b>Prerequisite (Co-requisite) :</b>	PHYS 3812
<b>Co-requisite :</b>	--
<b>Course Level:</b>	Seventh
<b>Credit Hours:</b>	3 (3+0+0)

**Module Description**

وصف المقرر :

Elementary particles: properties, classifications and detections. Fundamental forces between elementary particles. Symmetries and their role in studying elementary particle physics. Strong force. Electromagnetic force. Weak force. Relativistic quantum mechanics. Feynman diagram.
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**Module Aims**

أهداف المقرر :

1	The knowing of Ernestine law and the dual nature of the material.	
2	To know the fundamental forces in nature.	
3	To show the Quarks theory and the forces between Nucleons.	
4	Nuclear reactions at high energies.	
5	Sources and classifications of elementary particles.	
6	Expand the student's perceptions in the fine branches of elementary particles and how to address them for instance: high energy quantum mechanics, field theory, Feynman diagrams.	

**Learning Outcomes:**

مخرجات التعليم:

<b>1</b>	<b>Knowledge</b>	<b>1</b>
	<ul style="list-style-type: none"> <li>• To know the meaning of elementary particles.</li> <li>• To classify the elementary particles.</li> <li>• To explain Quarks theory.</li> <li>• To explain the meaning of nuclear reactions.</li> <li>• To explain the meaning of dual nature of the material.</li> <li>• To know the nuclear forces.</li> <li>• To know the importance of high energy quantum mechanics.</li> <li>• To know Feynman diagrams.</li> </ul>	
<b>2</b>	<b>Cognitive Skills</b>	<b>2</b>
	<ul style="list-style-type: none"> <li>• To distinguish between the different elementary particles.</li> <li>• To distinguish between the different types of forces (strong, weak, and electromagnetic).</li> <li>• To conclude the different mathematical relations describing the motion of elementary particles.</li> <li>• To distinguish between wave and particle natures of an object.</li> <li>• To explain Feynman diagrams.</li> </ul>	
<b>3</b>	<b>Interpersonal Skills and Responsibility</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>• The ability to interact professionally with others, to engage effectively in teamwork, and to function productively on multidisciplinary group projects.</li> <li>• To develop in each student good writing skills so that they are able to communicate effectively and clearly</li> <li>• To develop in each student good oral communication skills so that they are able to communicate effectively with others</li> </ul> <p style="text-align: center;">The ability to present their opinions clearly, and to accept the others opinions.</p>	
<b>4</b>	<b>Communication, Information Technology and Numerical Skills</b>	<b>4</b>
	<ul style="list-style-type: none"> <li>• To be able to use the email and employ it in communicating with the instructor and the other students.</li> <li>• Search the web to get any update information concerning the course topics.</li> </ul>	
<b>5</b>		<b>5</b>

**Course Contents:**

محتوى المقرر:

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
9	3	Elementary particles: properties, classifications and detections.
9	3	Fundamental forces between elementary particles.
9	3	Symmetries and their role in studying elementary particle physics.
6	2	Strong force. Electromagnetic force. Weak force.
6	2	Relativistic quantum mechanics.
3	1	Feynman diagram.

**Textbook and References:**

الكتاب المقرر والمراجع المساندة:

سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم الكتاب المقرر Textbook title
4 <sup>th</sup> Ed. (2000); ISBN-10: 0521621968	Cambridge University Press	<i>D. Perkins</i>	Introduction to High Energy Physics
سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم المرجع Reference
1 <sup>st</sup> ed. (1984); ISBN-10: 0471887412	Wiley	<i>F. Halzen and A. D. Martin</i>	Quarks & Leptons
3 <sup>rd</sup> Ed. (1991); ISBN-10: 0521407397	Cambridge University Press	<i>I. S. Hughes</i>	Elementary Particles