مختصر توصيف المقرر

معلومات المقرر * **(Course Information)**

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 (3+0+0)	

Module Title:	Elementary Particles Physics
Module ID:	PHYS 4832
Prerequisite (Co-requisite) :	PHYS 3812
Co-requisite :	--
Course Level:	Seventh
Credit Hours:	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.

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:**

1	**Knowledge** • To know the meaning of elementary particles. • To classify the elementary particles. • To explain Quarks theory. • To explain the meaning of nuclear reactions. • To explain the meaning of dual nature of the material. • To know the nuclear forces. • To know the importance of high energy quantum mechanics. • To know Feynman diagrams.	**1**
2	**Cognitive Skills** • To distinguish between the different elementary particles. • To distinguish between the different types of forces (strong, weak, and electromagnetic). • To conclude the different mathematical relations describing the motion of elementary particles. • To distinguish between wave and particle natures of an object. • To explain Feynman diagrams.	**2**
3	**Interpersonal Skills and Responsibility** • The ability to interact professionally with others, to engage effectively in teamwork, and to function productively on multidisciplinary group projects. • To develop in each student good writing skills so that they are able to communicate effectively and clearly • To develop in each student good oral communication skills so that they are able to communicate effectively with others The ability to present their opinions clearly, and to accept the others opinions.	**3**
4	**Communication, Information Technology and Numerical Skills** • To be able to use the email and employ it in communicating with the instructor and the other students. • Search the web to get any update information concerning the course topics.	**4**
5		**5**

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