مواصفات مقرر فيزياء (ذرية أطياف)

- **البرنامج الذي يقدم المقرر من خلاله** (إعداد معلم الفيزياء)
- **يمثل المقرر عنصرا (**رئيسيا **) بالنسبة للبرنامج**
- **القسم العلمي المسئول عن البرنامج (**متعدد**)**
- **القسم العلمي المسئول عن تدريس المقرر (**قسم الفيزياء**)**
- **السنة الدراسية / المستوى** (الفرقة الثالثة عام. شعبة الطبيعة / الفصل الدراسى الأول**)**
- **تاريخ اعتماد توصيف البرنامج ( )**

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Basic Data بيانات أساسية

1) العنوان : فيزياء ذرية وأطياف
2) الكود : 311 ph
3) الساعات المعتمدة Five credit hours
   - المحاضرة: 2 h lect. /w
   - الدروس العملية: 3h lab / w.
   - المجموع: 5 credit hours

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Professional Data بيانات مهنية

1) General goals of the course (1) الأهداف العامة للمقرر

- ***The course is designed to help student-teachers achieve the following goals:***

The student has to know :

1- The historical development of atomic physics.

2- Structure of the atom and generation of X- rays.

3- Effect of external magnetic fields on atoms.

2) Operational learning objectives of the course (2) الأهداف الإجرائية للمقرر

By the end of this course, student teachers are expected to achieve the following objectives:

A) Knowledge and Comprehension: أ- المعرفة والفهم:

The students have to recognize the following :

أ.1 The historical development of the atomic structure including Bohr's model Sommenfield model and Vector model.
أ.2 X-ray production and properties.
أ.3 Normal and Anomalous Zeeman effects.

B) Cognitive Skills: ب- المهارات العقلية:

ب.1. Relate the concepts of physics to contemporary, historical, technological, and societal issues; in particular, relate concepts of physics to current controversies, such as those around energy uses and medical research, as well as other issues.

ب.2. Apply mathematics, including calculus and statistics, to investigations in physics and the analysis of data.

C) Practical Skills: جـ- المهارات العملية:

ج.1 Locate resources, design and conduct inquiry-based open-ended investigations in physics, interpret findings, communicate results, and make judgments based on evidence

ج.2 Construct new knowledge for themselves through research, reading and discussion, and reflect in an informed way on the role of science in human affairs.

ج.3 Understand and promote the maintenance of a safe science classroom, including the appropriate use and storage of scientific equipment, and the safe storage, use, and disposal of chemicals.

D) Enabling Skills: د- المهارات العامة والمنقولة:

د.1 Demonstrate competence in the practice of teaching as defined within the Entry-Level Standards .

د.2 Create and maintain an educational environment in which conceptual understanding will occur for all science students.

د.3 Demonstrate competence in the practice of teaching through investigative experiences and by demonstrating the application of the scientific process and assessing student learning through multiple processes.

د.4 Develop an understanding and appreciation for the nature of scientific inquiry.

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Contents المحتويات

Week	Topic	Assigned hours		
		Lectures	Rec	Total
First	• Historical background. • Thomson's model.	2	3	5
Second	• Rutherford's Model. • Line spectrum – Energy levels.	2	3	5
Third	• Hydrogen atom spectrum. • Bohr's atomic model.	2	3	5
Fourth	• Frank – Hertz Exp. • Sommerfield Model.	2	3	5
Fifth	• Vector model. • Many electron atoms.	2	3	5
Sixth	• Stern –Gerlach experiment. • Pauli Exclusion Principle.	2	3	5
Seventh	• Periodic table. • X- rays.	2	3	5
Eighth	• X-rays production. • X-rays line spectra.	2	3	5
Ninth	• X-rays continusous spectra. • Electronic configuration.	2	3	5
Tenth	• The normal Zeeman Effect.	2	3	5
Eleventh	• Anomalous Zeeman Effect.	2	3	5
Twelfth	• Double fine structurer.	2	3	5
Thirteenth	• Selection rules for possible transition.	2	3	5

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Activities, tasks and assignments: أساليب التعليم والتعلم

Lectures.
Problems essay and assignments.

Assessment and Evaluation tools: أساليب التقييم

- Semester activities including classroom interactions and Quizzes.
- Mid – term exam
- Lab performance evaluation.
- Oral exam.

- Final exam

Summative Evaluation table **جدول التقسيم**

Assessment	Final exam	Fifteenth Week	الأسبوع الخامس عشر	نهاية الفصل الدراسي	**التقييم**

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النسبة المئوية لكل تقسيم

Assessment	**Score وزن الدرجة Weight**	**التقييم**
2. Final written exam	**%68.58**	**1. امتحان نهاية الفصل الدراسي**
3.Practical exam	**%20**	**2. الامتحان العملى**
4. assignments	**%11.42**	**3. أعمال فصلية**
Total	**%100**	**المجموع**

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References: **قائمة المراجع**

- **Text books.**

1- An Introduction to atomic and nuclear physics by H.Semat.
2- Advanced Physics by Kieth Gibbs.
3- Modern Physics by Weidner and sells

الامكانات المطلوبة للتعليم والتعلم

Educational sources:

- Computer simulation programs and slides.
- Transparences.
- Manual of solved problems (answer and solutions)

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- **منسق المقرر:** **Course coordinator:**
- **رئيس القسم:** **Head of the Department:**
- **التـــــاريخ:** **Date:**