

مواصفات مقرر فيزياء (نووية 2)

- 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 الرابعة عام. شعبة الفيزياء / الفصل الدراسي الأول)
- تاريخ اعتماد توصيف البرنامج ()

Basic Data

بيانات أساسية

(1) Course Title:	العنوان : فيزياء نووية 2	(1)
(2) Course Code No.:	الكود : 413 ph	(2)
(3) Credit Hours:	Four credit hours	(3)
Lectures:	المحاضرة : 2 credit hours	•
Laboratory practice:	الدروس العملية : 2 credit hour	•
Total hours:	المجموع : 4 credit hours	•

بيانات مهنية

(1) الأهداف العامة للمقرر:

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

- the students to nuclear forces, reactors and accelerators.
- The students have to know structure of the nucleus in terms of nuclear forces and its applications in both nuclear reactors and accelerators..

(2) نواتج التعلم المستهدفة

أ- المعرفة والفهم:

A) Knowledge and Comprehension:

The student have to recognize the following:

- a.1 Nature of nuclear forces with an application to the simplist nuclear system.
- a.2 Nuclear structure and nuclear models.

B) Cognitive Skills:

ب- المهارات العقلية:

- b.1 Electric and magnetic properties of the nucleus and the concept of parity.
- b.2 Neutron and reactor physics
- b.3 Dielectrics and their types.

C) Practical Skills:

ج- المهارات العملية:

c.1 Accelerators

D) Enabling Skills:

د- المهارات العامة والمنقولة:

d.1 The students have to recognize the role of external and internal hazards of radiation sources and radiation protection..

المحتويات:

Week	Topic	Assigned hours		
		Lectures	Labodatory	Total
First	▪ Electric and Magnetic properties of the nucleus. The quantum numbers of the nucleon inside the nucleus. The nuclear energy levels. The Vector coupling. The magnetic moment of the nucleus. The parity.	2	2	4
Second		2	2	4
Third	▪ The nuclear forces, Schrodinger's wave equation of duetron.	2	2	4
Fourth		2	2	4
Fifth	▪ Theories and mechanisms of Alpha, Beta and Gamma decay.	2	2	4
Sixth		2	2	4
Seventh	▪ Nuclear structure and nuclear models: Liquid drop model and the shell model as examples.	2	2	4
Eighth		2	2	4
Ninth	▪ Neutron and reactor physics: Production of neutrons- Neutron reactions and detection- Fission reactions- Principles of reactors: (Types- Fuels- moderators- coolants). Infinite amplification coefficients- critical volume- Examples- Fussion reactions.	2	2	4
Tenth		2	2	4
Eleventh	▪ Accelerators: Importance- Types- Use.	2	2	4
Twelfth		2	2	4
Thirteenth		2	2	4

أساليب التعليم والتعلم

- Solves and discusses problem sets.
- Submission and class presentation of term papers.
- Computer aided and web based assignments and assessment.
- Visits to industrial and medical institutions and submission of subsequent reports.
- Laboratory work, group discussions, and reports on: volumetric analysis, precipitation, complexometric and redox titrations
- Lectures.
- Laboratory experiments.
- Problems and essay assignments.

أساليب التقييم

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

Summative Evaluation table

جدول التقييم

Assessment	Final exam	Fifteenth Week	الأسبوع الخامس عشر	نهاية الفصل الدراسي	التقييم
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النسبة المئوية لكل تقييم

Assessment	Score ٬ وزن الدرجة ٬ Weight	التقييم
1. Midterm exam	-	1. امتحان نصف الفصل الدراسي
2. Final written exam	%70	2. امتحان نهاية الفصل الدراسي
3. Final practical exam	%20	3. الامتحان العملي
4. assignments	%10	4. أعمال السنة
Total	%100	المجموع

قائمة المراجع

- Fundamentals of physics by D-Halliday & R.Resnik.
- " Physics Principles with applications ",D.C Giancoli, USA..
- " University physics", F.W. Sears,M.W. Zemasky and H.D. Young, Wesley series in physics, USA
- Physics by Joseph W.Kane, Morton M. Sternhein. John wiley and sons.
- Atoms, Radiation and Radiation protection, James
- E.Turner. 1985, Interscience publication, John Wiley & Sons, Inc.
- "Elements of X-ray diffraction", B.D. Cullity, Addison- Wesley pub. Company.Inc.
- " Introduction to solid state physics", C.Kittel, John Wiley& son,Inc.
- " Introduction to solids", L.V Azaroff, McGrew- Hill
- " Structure of Metals", C.S Barrett, McGraw Hill.
- " Solid state physics ", A.J. Dekker, MacMillan Press Ltd.
- " An Introduction to solid state Physics", R.J Elliot and A.F. Gibson.
- " Theoretical structure Metallurgy", A.H. Cottrell, E.L.B.S.& Edward Arnold pub.Ltd.

الإمكانات المطلوبة للتعليم والتعلم

- Computer simulation programs and slides.
- Transparences.
- Manual of solved problems (answer and solutions)
- References
- Textbooks
- Handouts and problem sets.
- Electronic, web, and multimedia based resources.
- Lab work.

• منسق المقرر:

• رئيس القسم:

• التاريخ: