

مواصفات مقرر فيزياء (إشعاعية)

- 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 الثاني)
- تاريخ اعتماد توصيف البرنامج ()

Basic Data

بيانات أساسية

(1) Course Title:	العنوان : فيزياء المواد	(1)
(2) Course Code No.:	الكود : 423 Ph	(2)
(3) Credit Hours:	الساعات المعتمدة: Four credit hours	(3)
Lectures:	المحاضرات : 2 credit hours	•
Laboratory practice:	الدروس العملية : 2credit hour	•
Total hours:	المجموع : 4 credit hours	•

بيانات مهنية

1) General goals of the course

(1) الأهداف العامة للمقرر

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

- know new and advanced materials and their applications in high technology and daily life
- Developing the students creative thought needed to participate in the development of materials science and physics of materials

2) Operational learning objectives of the course

(2) الأهداف الإجرائية للمقرر

A) Knowledge and Comprehension:

(أ) المعرفة والفهم

The student have to recognize the following:

- a.1 Diffusion in solids.
- a.2 Deformation mechanisms and heat treatment.
- a.3 New and advanced materials.

B) Cognitive Skills:

(ب) المهارات العقلية:

- b.1 Mechanical properties of solids and their tests.
- b.2 External and internal hazards of radiation sources.
- b.3 Fundamental of mechanical properties
- b.4 Theory of plasticity

C) Practical Skills:

(ج) المهارات العملية:

- c.1 Structural of metals and alloys.
- c.2 Types of Crystal imperfections
- c.3 Structure of metals: close packed arrangement and types of alloys.
- c.4 Diffusion of solids.

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

Contents**المحتويات**

Week	Topic	Assigned hours		
		Lectures	Laboratory	Total
First	▪ Structure of metals: close packed arrangement and types of alloys. ▪ Equilibrium diagrams.	2	2	4
Second		2	2	4
Third	▪ Diffusion of solids.	2	2	4
Fourth	▪ Fundamental of mechanical properties.	2	2	4
Fifth	▪ Theory of plasticity	2	2	4
Sixth	▪ Materials testing: Tension, hardness, fatigue and creep.	2	2	4
Seventh	▪ Deformation of polycrystalline materials.	2	2	4
Eighth	▪ Grain boundaries and deformation.	2	2	4
Ninth	▪ Strengthening mechanisms.	2	2	4
Tenth	▪ Heat treatment: recovery, crystallization and grain growth.	2	2	4
Eleventh	▪ Superconductors, ceramics, liquid- crystals, composite, polymers, nano-materials, photonic materials.	2	2	4
Twelfth		2	2	4
Thirteenth		2	2	4

Activities, tasks and assignments:

أساليب التعليم والتعلم:

- Lectures
- Laboratory experiments.
- Demonstrations
- report writing
- brainstorming
- discussions
- Problems and essay assignments.

Assessment and Evaluation tools:

أساليب التقييم

- Semester activities including classroom interactions and Quizzes.
- Lab performance evaluation
- Oral exam.
- 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		التقييم
1. Midterm exam		1. امتحان نصف الفصل الدراسي
2. Final written exam	%70	2. امتحان نهاية الفصل الدراسي
3. Final oral exam	%20	3. الامتحان العملي
4. assignments	%10	4. أعمال السنة
Total	%100	المجموع

قائمة المراجع

- Material Science and Engineering, an introduction by William D. Callister Jr. John wiley & 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 & Sons, Inc.
- "Introduction to Solids", L.V. Azaroff, McGraw – Hill.
- "An Introduction to solid state physics", R.J.Elliot and A.F.Gibson, Macmillan Press, LTD.
- Elementary Solid State Physics. By M.Ali Omar Revised Printing Addison Wesley Longman 1993.
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الإمكانات المطلوبة للتعليم والتعلم

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

- منسق المقرر:
- رئيس القسم:
- التاريخ: