Basic Data

(1) Course Title: الموجه: فیزياء المواد
(2) Course Code No.: الكد: 423 Ph
(3) Credit Hours: ساعات المنهج: 
Lectures: 2 credit hours المحاضرة: 
Laboratory practice: 2 credit hour الدروس العملية: 
Total hours: 4 credit hours المجموع: 

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Beats 

1) General goals of the course
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

A) Knowledge and Comprehension:
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:

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:

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:

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

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

- Lectures
- Laboratory experiments.
- Demonstrations
- Report writing
- Brainstorming
- Discussions
- Problems and essay assignments.

Assessment and Evaluation tools:

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

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Summative Evaluation table

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<th>Final exam</th>
<th>Fifteenth Week</th>
<th>Semester activities</th>
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<tr>
<td>1. Midterm exam</td>
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<td>1.  امتحان نصف الفصل الدراسي</td>
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<td>2. Final written exam</td>
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<td>2.  امتحان نهاية الفصل الدراسي</td>
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<td>3. Final oral exam</td>
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<td>3.  الامتحان العملي</td>
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<td>4. assignments</td>
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<td>4.  أعمال السنة</td>
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<td>Total</td>
<td>%100</td>
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<td>المجموع</td>
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References:

- "Introduction to solid state physics", C.Kittel, John Wiley & Sons, Inc.
- "Introduction to Solids", L.V. Azaroff, McGrew – Hill.
- "An Introduction to solid state physics", R.J.Elliot and A.F.Gibson, Macmillan Press, LTD.

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افظتك المطلوبة للتعليم والتعلم

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

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منسق المقرر:

رئيس القسم:

التاريخ: