

مواصفات مقرر طاقات جديدة ومتجددة

- 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

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|----------------------|-------------------|---------------------|-----|
| (1) Course Title: | العنوان : | طاقات جديدة ومتجددة | (1) |
| (2) Course Code No.: | الكود : | 422 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:

- Students have to know basic renewable energy sources including solar energy, wind energy and that produced from water resources.
- Students have to know the essential role of renewable energy as clean safe and some what low cost sources

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 know the essential role of renewable energy as clean safe
- a.2 know basic renewable energy sources including solar energy, wind energy and that produced from water resources
- a.3 Wind energy generators.
- a.4 Energy produced from water resources.

B) Cognitive Skills:

(ب) المهارات العقلية:

- b.1 Heat treatment: recovery, crystallization and grain growth.
- b.2 Apply Traditional vs renewable energy sources.
- b.3 Apply Solar energy.

C) Practical Skills:

(ج) المهارات العملية:

- c.1 Structure of metals: close packed arrangement and types of alloys
- c.2 Deformation of polycrystalline materials.
- c.3 testing: Tension, hardness, fatigue and creep.

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."Introduction to Solids", L.V. Azaroff, McGrew – 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.

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: