مواصفات مقرر كيمياء 1

- **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 الكيمياء**)**
- **السنة الدراسية / المستوى (**الفرقة الثانية-شعبة الفيزياء/ الفصل الدراسى الأول**)**
- **تاريخ اعتماد توصيف البرنامج ( )**

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بيانات أساســية

Basic Data

بيانات أساســـية

(1) Course Title: Chemistry I
(2) Course Code No.: 211 ch
(3) Credit Hours: five credit hours
Lectures: 2 credit hours
Lab.: 2 hours
Total hours: 4credit 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:**
  - Understand the nature of energy.
  - Explain thermodynamic laws.
  - Correlate thermodynamic potential and equilibrium states.
  - Describes the thermodynamics properties of solutions.

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:

A-1 Apply the thermodynamic laws on chemical reactions and calculations.
A-2 Describe the equilibrium states in chemical reactions.
A-3 Applies the partial molar quantities to solutions.
A-4 Identify biological and engineering applications.
A-5 Identify different forms of energy.
A-6 Apply first law of Thermodynamics.
A-7 Explain the application of Thermo chemistry in calculations of bond energies, lattice energy … etc. Obtain heats of formation, ionization, etc.

A-8 Describes performance of heat engines and pumps.
A-9 Define the concept of entropy.
A-10 Describes concepts of spontaneity of chemical reactions.
A-11 Explain factors affecting equilibrium.
A-12 Discuss and apply partial molar quantities and activities to solution properties.

B) **Cognitive Skills**:
B-1 Relate the concepts of physical chemistry to contemporary, historical, technological, and societal issues; in particular, relate concepts of physical chemistry to current controversies, such as those .around energy uses and medical research, as well as other issues
B-2 Demonstrate competence in the practice of teaching as defined within the Entry-Level Standards.

C**) Practical Skills:**
C-1 Locate resources, design and conduct inquiry-based open-ended investigations in physical chemistry, interpret findings, communicate results, and make judgments based on evidence.
C-2 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.
C-4 Acquire hands on practical skills.

D) **Enabling Skills:**
D-1 Construct new knowledge for themselves through research, reading and discussion, and reflect in an informed way on the role of science in human affairs.
D-2 Create and maintain an educational environment in which conceptual understanding will occur for all science students.

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Contents

المحتويات

week	Topics	Lecture	Lab.	Total
First	Chemical Thermodynamics ***Chemical thermodynamics:** heat, energy,	2	2	4
Second	Structure, work, intensive and extensive quantities.	2	2	4
Third	***** First law:** reversible and irreversible processes	2	2	4
Fourth	heat capacity, isothermal, adiabatic	2	2	4
Fifth	isobaric processes, J – T affect, thermochemistry, Kirchoff's law.	2	2	4
Sixth	**Second law:** Carnot cycle, entropy, heat engines and pumps.	2	2	4
Seventh	**Third law.** ***Gibbs and Heimholtz Free energy: Partial** derivatives and Maxwell relations.	2	2	4
Eighth	chemical potential.	2	2	4
Ninth	chemical equilibrium.	2	2	4
Tenth	Le Chatelier priniple.	2	2	4
Eleventh	***** Solutions:** Partial molar properties.	2	2	4
Twelfth	activity and activity coefficient	2	2	4
Thirteenth	Debye – Huckle theory.	2	2	4

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Activities, tasks and assignments:

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 power solar and other plants.
- Molecular modeling to demonstrate kinetic behaviour of gases.

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Assessment and Evaluation tools: أساليب التقييم

- Final exam
- Hourly and midterm exams.
- Oral assessment.
- Assessment of term paper, reports and group discussions.
- Quizzes
- Evaluation of performance in group projects and reports.

Summative Evaluation table جدول التقييم

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	**70**	**1. امتحان نهاية الفصل الدراسي**
3. Final practical exam	**20**	**2. الامتحان العملى**
4. assignments	**10**	**3. أعمال فصلية**
Total	**100**	**المجموع**

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References: قائمة المراجع

Students' Textbooks **(1) كتب الطالب**

Periodicals and websites **(2) مجلات علمية، ومواقع الإنترنت**

The Journal of chemical physics
The journal of physical chemistry. A.
The journal of physical chemistry. B,

Resources الإمكانات المطلوبة للتعليم والتعلم

- References
- Chemistry library
- Textbooks
- Handouts and problem sets.
- Electronic, web, and multimedia based resources.
- Lab work.

- منسق المقرر: د / محمد عبد اللطيف **Course coordinator:**
- رئيس القسم: د / مدحت شاكر **Head of the Department:**
- التاريخ : **Date**

رؤية الكلية: انطلاقا من رؤية جامعة الإسكندرية تسعى كلية التربية بدمنهور إلى تحقيق الجودة والحصول على الاعتماد الاكاديمى لتحتل مكانة متميزة بين كليات التربية على المستوى القومي و العالمي (مجلس الكلية ، **8** مارس **2009**) .

رسالة الكلية : إعداد المعلمين والكوادر المؤهلة القادرة على تطوير النظم التعليمية والإدارية بالتعليم العام والفني ، والباحثين القادرين على تطوير