

University Benha

Faculty Science

### Course specifications

Programme (s) on which the course is given **Chemistry/ Appl Chem / Chem-phys**

Major or minor element of programmes **Major**

Department of offering the programme **chemistry**

Department offering the course **chemistry**

Academic year /Level **2<sup>nd</sup> year 1<sup>st</sup> team**

Date of specification approval **2008**

### A – Basic information

Title : **Physical Chem. (Thermodynamics)** Code : 241CH

Credit Hours : Lecture : **4 hour / week**

Tutorial : 1 hr/w Practical : Total: 5 hrs/w

### B – Professional Information

#### 1- Overall aims of course: At the end of this course the students able to

Focus on the bases thermodynamics, Know the difference between general electrochemistry and the importance and application of electrochemistry in our life

#### 2- Intended learning outcomes of course (ILOS)

##### a-Knowledge and understanding:

- a1- **Know** the basic laws of thermodynamics.
- a2- Understand the free energy concept.
- a3- Understand the meaning of electrochemistry
- a4- Uses of electrochemistry and how to improve
- a5- Storage batteries and 1 batteries

##### b-Intellectual skills

To be able to:

- b1- Treat with problems identification and solving .
- b2- Magnate skills
- b3- Treat with methods of applications

##### c-Professional and practical skill:

By the end of the course the student will be able to:

- c1- decide the direction of equilibrium.

#### **d- General and transferable skills:**

d1- Oral communication

d2- Group working

#### **3- Contents**

<b>Topic</b>	<b>No. of hours</b>	<b>Lecture</b>	<b>Tutorial /practical</b>
The basic concepts of thermodynamics	10	8	2
1 <sup>st</sup> law	10	8	2
2 <sup>nd</sup> and 3 <sup>rd</sup> laws	10	8	2
Free energy	5	4	1
Galvanic cells	5	4	1
Types of electrode	5	4	1
Types of cells	5	4	1
Nernst equation	5	4	1
Application of E.M.F	5	4	1
Potentiometric titration batteries	5	4	1
Total	65	13	13

#### **4-Teaching and Learning methods**

**4.1-** lectures

#### **5-Student assessment methods**

**5.1** mid term **to assess** student understanding

**5.2** practical **to assess** communication skills

**5.3** oral **to assess** student understanding

**5.4** final exam **to assess** overall the course knowledge and skills

#### **Assessment Schedule**

Assessment 1 discussion.....week **3**

Assessment 2 mid term.....week **7**

Assessment 3 ..... week 10

Assessment ..4.....after week 14

#### **Weighting of assessments**

Mid term examination 10 %

Final term examination	80%
Oral examination	5%
Practical examination	%
Semester work	%
Other types of assessment	5 %
Total	100%

Any formative only assessments

## **6- List of references**

### **6.1- Course notes**

Hand out notes

### **6.2-Essential text books**

Modern electrochemistry by K.N. Reddy & O.H. Rockris ELBS, Longman(1986)

### **6.3- Recommended books**

Modern electrochemistry by K.N. Reddy & O.H. Rockris

### **6.4-Periodicals**

### **6.5 Web sites.**

Science direct, google.com; Chemweb.co

### **6.7- workshop notes.....**

## **7-Facilities required for teaching and learning**

Data show- computer - projector and other recent text books (hard version, an electronic form and video practical courses)

### **Course coordinator :**

**Dr. Ali Y El-Etre**

**Dr. Amany Mohmaed Attia**

Date : 17 /6 /2007