

## SUBJECT OUTLINE DETAILS

### 1. Subject: Fundamental Chemistry I Laboratory

- Code: CH161C
- Credits: 1
- Hours: 30 practice hours.

### 2. Management Unit:

- Department: Department of Chemistry
- Faculty/School/Institute/Center/Department: College of Natural Sciences

### 3. Prerequisites: Fundamental Chemistry I

### 4. Subject objectives:

To illustrate basic knowledge on general chemistry including chemical equilibrium, thermodynamics, chemical kinetics, acid-base and inorganic chemistry.

#### 4.1. Knowledge:

- 4.1.1. Develop proper laboratory skills and techniques for safely acquiring experimental data and characterizations of inorganic compounds.
- 4.1.2. Investigate the important reactions of typical inorganic compounds.
- 4.1.3. Understand the key chemical principles of experiments through the observation, collection, and summarization of experimental data using the scientific method.

#### 4.2. Skill:

- 4.2.1. The program of General Chemistry Laboratory consists of 6 experiments. Most of these experiments train the students some skills: measurements, methods of data treatment, calculations and so on
- 4.2.2. To provide the students with a degree of competence in the laboratory skills required for accurate and precise chemical analysis.
- 4.2.3. Learn effective communication of scientific results, both written and oral.

#### 4.3. Attitude:

The course also provides an opportunity to set up and develop personal characteristics necessary for scientific activities such as curiosity, persistence, and concentration. A successful student will bear a balance between scepticism and receptivity, a love for science and self confidence.

### 5. Brief description of subject content:

The course will provide students with experiments focusing on the chemical equilibrium in solution, enthalpy change associating with a chemical reaction, reaction rate, chemistry of non-metals and their compounds and chemistry of transition metals

and complex compounds. Besides, the course is also designed to develop the laboratory techniques, data collection, and data analysis, in addition to demonstrate the basic reactions of typical inorganic compounds. Through the experiences, students reinforce and promote an understanding of the principles of stoichiometry, gases, liquids, solutions, energy and chemical reactions.

## 6. Subject content structure:

	Content	Hours	Objectives
<b>Unit 1.</b>	<b>Volumetric titration</b>		
1.1	Prepare a 0,1 N NaOH solution		4.1; 4.2; 4.3
1.2	Weak monoacid titration (acetic acid)		4.1; 4.2; 4.3
<b>Unit 2.</b>	<b>Rate of reaction</b>		
	Examine the influence of concentration, temperature, catalyst on the rate of reaction.		4.1; 4.2; 4.3
<b>Unit 3.</b>	<b>Measure the Emf and calculate the thermodynamic quantity</b>		
3.1	Measure cell - Emf at different temperatures		4.1; 4.2; 4.3
3.2	Calculate the thermodynamics quantities: $\Delta G$ , $\Delta H$ , $\Delta S$		4.1; 4.2; 4.3
<b>Unit 4.</b>	<b>Chemistry of non-metals and their compounds</b>		
4.1.	Hydrogen and its compounds		4.1; 4.2; 4.3
4.2.	Halogens and their compounds		4.1; 4.2; 4.3
4.3.	Group 15 elements and their compounds		4.1; 4.2; 4.3
4.4.	Group 16 elements and their compounds		4.1; 4.2; 4.3
<b>Unit 5.</b>	<b>Chemistry of main-group metals and their compounds</b>		
5.1.	The alkali metals and their compounds		4.1; 4.2; 4.3
5.2.	The alkaline earth metals and their compounds		4.1; 4.2; 4.3
5.3.	The group 13 elements and their compounds		4.1; 4.2; 4.3
<b>Unit 6.</b>	<b>Chemistry of transition metals and coordination compounds</b>		
6.1.	Reactions involving chromium compounds		4.1; 4.2; 4.3
6.2.	Reactions involving manganese compounds		4.1; 4.2; 4.3
6.3.	Reactions involving iron compounds		4.1; 4.2; 4.3
6.4.	Reactions involving cobalt compounds		4.1; 4.2; 4.3
6.5.	Reactions involving copper compounds		4.1; 4.2; 4.3

**7. Teaching method:** discussion; demonstration; self-learning; group-working

## 8. Duties of student:

Students have to do the following duties:

Students are required to attend all the experimental hours of the course and write complete reports.

## 9. Assessment of student learning outcomes:

### 9.1. Assessment

No.	Point components	Rules and Requirement	Weights	Objectives
1	Report	Report	30%	4.1;4.2;4.3
2	Final examination	Oral exam	70%	4.1;4.2;4.3

### 9.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

## 10. Materials:

Materials information	Code number
[1] Mai Viết Sanh, 1997, Giáo trình thực tập Hóa Đại Cương A2, Khoa Khoa Học.	
[2] Mai Viết Sanh, 1997, Giáo trình Thực tập Hóa Vô cơ và Hữu cơ Đại cương A3, Khoa Khoa Học.	
[3] Võ duy Thanh, 1995, Giáo trình Thực tập Hóa Đại cương, Trường Đại học Tổng hợp Tp. HCM.	MOL.014181 541.2028/ Th107

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**ON BEHALF OF RECTOR  
DEAN/ DIRECTOR**

**HEAD OF DEPARTMENT**