Course Specifications

General Information

Course name	Practical Analytical Chem.
Course number	CHEM2106
Faculty	
Department	
Course type	Major Needs
Course level	2
Credit hours (theoretical)	1
Credit hours (practical)	1
Course Prerequisites	

Course Objectives

1 - 1. To provide students with practical experimentation on the quantitative analysis (gravimetric and volumetric methods). 2. Teaching students the gravimetric method of analysis for determination some ions such as chloride, sulfate, and nickel. 3. Teaching students the volumetric (titrimetric) method of analysis for determination some compounds. 4. Teaching students how to prepare standard solutions and standardization the solutions. 5. Teaching students to be familiar with the correct use of volumetric glassware to prepare solutions and perform titrations. 6. Simple statistical treatment and calculations to ensure proper dealing and interpret the results.

Intended Learning Outcomes

Knowledge and Understanding	* a. Gain general basics, principles and applications of chemistry b. Understand the fundamentals of gravimetric and volumetric analysis. c. Preparation and standardization of solutions.
Intellectual Skills	* a. Analyze data from analytical experiments statistically. b. Assess and interpret the different properties of chemical methods of analysis. c. Select suitable methods, conditions to analyze a given compound by volumetric and gravimetric method. d. Interpret issues in chemistry with reference to the practices of the international scientific community.
Professional Skills	* a. Ability to interpret experimental results, perform calculations on these results, writing reports and draw reasonable conclusions b. Conduct quantitative analyses using gravimetric and volumetric methods. c. Handle basic analytical tools safely and efficiently. d. Gain knowledge and understanding of the issues of safety regulations in the use of chemicals in their laboratory work.
General Skill	* a. Ability to recognize and solve problems related to chemistry. b. Ability to communicate with scientists and nonscientists. c. Demonstrate team-working ability through group projects. d. Demonstrate time-management skills. e. Ability to make effective use of the library and other information resources in chemistry, including the primary literature, tabulated data, and secondary sources such as the internet.

Course Contents

1 - 1. Solutions preparation. 2. Gravimetric analysis: Determination of chloride gravimetrically. Determination of Ni in sample by DMG. 3. Preparation and standardization of NaOH solution with KHP. 4. Analysis of Aspirin. 5. Analysis of vinegar. 6. Mid Exam. 7. Preparation and standardization of HCl solution and determination the % of sodium carbonate in soda ash. 8. Precipitation Titration: determination of chloride: Mohr method. 10. Complexometric titration: Determination of the water-hardness on drinking water. 11. Redox titration: Preparation and standardization of potassium permanganate solution. 12. Redox titration: Determination of vitamin C in tablets. 13. Final Exam.

Teaching and Learning Methods

1 - Laboratory manuals will be provided to students. The modular course consists of twelve experiments performed by teams of two to three students each. The lab work is organized as follows: 1- Preparing for the experiment. The students should read and understand the laboratory protocol and read suggested reference materials prior to the lab session. In addition, some lab session time will usually be devoted to a discussion of the theory concern the experiment. 2- Running the experiment. Each team is responsible for conducting each experiment under supervision of lecturer. 3- End of the experiment. Preliminary discussion of the experimental outcomes with lecturer. 4- Report.

Students Assessment

Assessment Method	TIME	MARKS
1. Mid-term exam		20%
2. Attendance and discussion		10%
3. Homework and reports		20%
4. Notebook		10%
5. Final exam		40%

Books and References

Course note	Lecture notes.
Essential books	1. Lab manual prepared by lab lecturer. 2. D. A. Skoog and d. M. west, "Fundamentals of Analytical Chemistry", 7th ed CBS Publishing Asia ltd (2000).
Recommended books	1. Vogels Textbook of Quantitative Inorganic Analysis, 6th Edition Longman Scientific and Technical, USA (1998). 2. Christian G. D., "Analytical Chemistry", John?Wiley and Sons, Inc New York(1994).
Other References (Periodical, web sites, ... etc.)	1. http://www.chem.ucla.edu/harding/notes/notes.htm 2. www.siencedirect.com 3. www.chemweb.com