

**School of pharmacy**

**Department Medicinal Chemistry**

**Course title: Practical Analytical Chemistry**

**Credit (Practical): 1**

**Prerequisite: Practical General Chemistry**

**Course lecturers: Dr. Asadi**

**Responsible lecturer: Dr. Asadi**

- 1- Seminars and projects: **20% of whole mark**
- 2- Exercises: **20%**
- 3- Comprehensive Written Examination: **60% of whole mark**

## **Course Description:**

### **Course objectives:**

Explain the fundamentals of analytical chemistry and steps of a characteristic analysis. Expresses the role of analytical chemistry in science. Compare qualitative and quantitative analyses. Expresses the quantitative analysis methods.

### **Student Learning Objectives:**

1- Scientific reasoning and quantitative analysis. Our majors will be able to apply chemical concepts to solve qualitative and quantitative problems. They will gain proficiency in logical deduction skills through written problems and laboratory work. They will identify problems and generate hypotheses, develop and implement experimental methods to test their hypotheses, and analyze and interpret the resulting data.

2- Laboratory practice and safety. In order to learn the ways in which new scientific knowledge is created, our majors will experience how chemists interpret chemical and physical phenomena through experimental investigation. They will develop and apply the appropriate lab skills and instrumentation to solve chemical problems, while recognizing the uncertainties and error in experimental measurements. Our majors will understand the concepts of safe laboratory practices. They will learn how to dispose of waste appropriately, how to comply with safety regulations, and how to recognize and minimize hazards in the laboratory.

3- Chemical information and literature skills. Our majors will be able to use chemical databases and retrieve peer-reviewed scientific literature. They will be able to evaluate critically chemistry-related information from a variety of sources.

4- Communication skills. Our majors will gain facility in both written and verbal communication. They will be able to present information in a clear and effective manner, write reports in a scientific style, and use appropriate technology in their communication. They will be able to work effectively in a diverse group to solve scientific problems.

5- Impact and applications. Our majors will have access to a broad education in chemistry, including the opportunity to complete a major approved by the American Chemical Society. They will understand how chemical principles are applied to address current problems in a variety of fields, and they will have the background to understand the impact of chemistry on society both locally and globally.

**Course title: *Analytical Chemistry lab course***

	Subject	Lecturer	Presentation Method	Date	Time
1	Basic Laboratory Operations and safety (No bench work)	Dr. Asadi	Attendance class or offline videos	Sat. 27 Feb. (05 Esf)	13-15
2	MEASURING MASS, VOLUME AND CALIBRATION OF LABORATORY EQUIPMENT	Dr. Asadi	Attendance class or offline videos	Sat. 2 March. (12 Esf)	13-15
3	Determining the concentration of sulfate ion using the gravimetric method	Dr. Asadi	Attendance class or offline videos	Sat. 9 March. (19 Esf)	13-15
4	Determining the concentration of nickel ion using the gravimetric method	Dr. Asadi	Attendance class or offline videos	Sat. 06 April. (18 Far)	13-15
5	Standard solution preparation	Dr. Asadi	Attendance class or offline videos	Sat. 13 April. (25 Far)	13-15
6	Titration of strong acid and base	Dr. Asadi	Attendance class or offline videos	Sat. 20 April. (1 Ord)	13-15
7	Titration of weak acid and strong base	Dr. Asadi	Attendance class or offline videos	Sat. . 27 April. (8 Ord)	13-15
8	Titration of weak base and strong acid	Dr. Asadi	Attendance class or offline videos	Sat. 11 May. (22 Ord)	13-15
9	Measuring the concentration of sodium carbonate and bicarbonate in a mixture	Dr. Asadi	Attendance class or offline videos	Sat. 18 May. (29 Ord)	13-15
10	Argentometry: Measuring chlorine by Mohr's method	Dr. Asadi	Attendance class or offline videos	Sat. 25 May. (05 Khor)	13-15
11	Argentometry: Measuring chlorine by Volhard's method	Dr. Asadi	Attendance class or offline videos	Sat. 01 June. (12 khor)	13-15
12	Final Exam (Theory and Practical)	-----	-	Sat. 08 June. (19 khor)	13-15

**The contribution of the grade of the professors of the course**

Professors	Exercise	Practical final Exam	Theoretical Final Exam	Sum
Dr Asadi	5	6	9	20