

Theoretical and practical courses-Ilam University of Medical Sciences

Introduction to the course: Chemistry of practical analysis in the second semester of the academic year
2020-2021

School: Health Department:

Course and degree: Bachelor of Biology and Control of Disease Carriers

Day, time and place:

Number and type of unit (theoretical): 1

Name of the person in charge of the course (course instructor): Elahe Karimi

Prerequisite courses: Office address: Biotechnology and Medicinal Plants Research Center

Phone and contact days: 09183403913

General purpose of the course: to perform experiments and familiarity with common methods in determining the amount of chemical methods mentioned in the theory course

Lesson Description: Practical Introduction to Basic Concepts of Analytical Chemistry (Solution Sampling and Sample Solving)

Specific or partial objectives of the course:

Computations in Decomposition Chemistry, Errors in Decomposition Chemistry, Methods of Analysis: Gravimetry, Titration, and Titration Applications

Principles of safety in the laboratory

Methods of correctly reporting analysis results

Identify measurement errors

Methods for reducing measurement errors

Practical methods of analysis such as gravimetric analysis techniques

Types of titrations and their application

Student duties (student homework during the semester):

Students will learn the principles of practical work and calculations related to a variety of important and practical quantification methods, including acid and base titration, sediment titration, gravimetric, complex formation and redox reactions, and the Kjeldahl method.

The main sources of the lesson:

1- Basics of Decomposition Chemistry, Volumes I and II; Authors: Skook, West, Haller; Translators: Vida Tavassoli, Houshang Khalili and Ali Masoumi; University Publishing Center Publications; Sixth Edition

2- General Chemistry Volume II; Author: Charles Mortimer; Translator: Isa Yavari; University Science Publications; Sixth Edition

Teaching methods + teaching aids used:

Class boards, computers, video projectors, Excel software, laboratory tools

Methods and time of assessment and evaluation of the student and the bar related to each evaluation:

- 5 marks with the coordination of students, 15 final marks in due time

Lesson rules and expectations from students:

Schedule and predicted contents of each theory session

Session	Topic	Necessary preparation of students before the start of the class
1	A: Familiarity of students with volumetric instruments B: Familiarity with methods of expression of solution concentration c: Materials used to prepare the solution	Write a textbook, do accurate tests, solve problems at home, participate in class and solve problems
2	d: Calculations related to the preparation of solutions E: Practical preparation of solutions	
3	A: Measurement of HCl in the presence of methyl red B: Measurement of HCl in the presence of phenolphthalein c: Check and calculate the detector error	
4	d: Expression of pH meter method E: Measure H ₂ SO ₄ by pH meter	
5	A: Expression of different applications of acid-base titrations B: Measurement of acetic acid in the presence of a detector	
6	midterm	
7	c: Measurement of acetic acid by pH meter d: Determine the total acidity of vinegar	
8	A: Preparation of potassium permanganate solution	
9	B: Familiarity with manganometric titrations and their application c: Standardization of potassium permanganate solution	
10	d: Measurement of ferrous sulfate powder E: Measurement of ferrous sulfate tablets	
11	A: Expression of endpoint detection methods in sedimentary titrations	
12	B: Expressing the principles of the Mohr method c: Application of Mohr method in measuring chloride in different waters	

13	A: Prepare EDTA solution and standardize it	
14	B: Measurement of calcium by complexometric method	
15	A: Expression of the theory of gravimetric methods B: Explain the steps of gravimetric methods c: Barium analysis by gravimetric method	
16	A: Express the principles of qualitative analysis B: Isolation and identification of important cations c: Isolation and identification of important anions	
17	End of semester	