CHEM 313 Syllabus

Course Code	Course Name	Credits	Prerequisite(S)	Classification
CHEM 313	Chromatographic Methods of Separation	3	CHEM 211	Department Requirement

Course Description	Separation Methods, taught 5th level chemistry students. This course focuses on solvent extraction for isolating analytes from complex sample prior to chromatographic analysis, and it focuses on the principles and types of chromatographic methods.
Class Scheduling	Classes are held 2 times/week each for 80 minutes. Labs are held 1 time/week for 150 minutes.
Textbook	1- Analytical Chemistry, (Gary D. Christian). 7th ed., 2014. 2- "Instrumental Methods of Analysis", H.H. Willard, L.L. Merritt,Jr and J.A. Dean, New York, USA, 1972. 3- "Principles of Instrumental Analysis", Douglas.A. Skoog, F.J. Holler and T.A. Nieman, 5th ed., Learning, INC, New York, 1998, USA
Course Coordinator	Prof. Hadi M. Marwani Dr. Heba Alnajjar

Relationship to SOs

1	2	3	4	5	6
X		X			X

CLOs

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

CLO1. Describe the basic principles and classifications of solvent extraction technique and chromatographic separation techniques. (SO1)
CLO2. State each term in Van Deemter equation and some factors of chromatographic separation methods. (SO1)

CLO3. Identify some commonly techniques in gas and liquid chromatography and some commonly detectors in gas and liquid chromatography. (SO1)

CLO4. Calculate the percent extracted, distribution ratio, and some factors of chromatographic separation methods. (SO1)

CLO5. Perform the experiments of different separation mechanisms using separating funnel, paper, thin layer, and column chromatography. (SO3)
CLO6. Demonstrate self-learning in solving homework and oral communication skills. (SO6)

Contents

List of Topics	No. of Weeks
Sample Preparation: Solvent Extraction	2
Solvent extraction of metals	1
Chromatography: Principles and Theory	3
Planar Chromatography: TLC and PC	1
Column Chromatography: a) Gas Chromatography (GC)	3
b) High-Performance Liquid Chromatography (HPLC)	3
c) Ion Exchange Chromatography	2
Total	15
Laboratory Section: Extraction of Nickel as dimethyl glyoxime, Separation of mixture of $K_2Cr_2O_7$ and $KMnO_4$ by column Chromatography, Separation of metal ions, amino acids, and halides by Paper chromatography, preparation of Thin layer chromatography, Separation of chlorophyll and nitro phenol isomers by Thin layer chromatography, Separation of a hydrocarbon mixture by Gas-Liquid chromatography, Preparation of ion exchange column, Determination of an-ion-exchange resin, Determination of the total cation concentration in water.	13