

Kurdistan Region Government Ministry of Higher Education and Scientific Research Erbil Polytechnic University



Module (Course Syllabus)

Catalogue (2022-2023)

College/ Institute	Koya Technical Institute		
Department	Petroleum Technology - Chemical Analysis (Morning)		
Module Name	Separation Technique		
Module Code	SPT402	40	
Degree	Technical Diploma ✓ Master PhD	Bachelor High Diploma	
Semester	4 th		
Qualification	Master		
Scientific Title	Lecturer Assistant		
ECTS (Credits)	8		
Module type	Prerequisite Core / Assist.		
Weekly hours	4		
Weekly hours (Theory)	(2)hr Class	(85)Total hrs Workload	
Weekly hours (Practical)	(2)hr Class	(90)Total hrs Workload	
Number of Weeks	16		
Lecturer (Theory)	Sardasht Rifaat Taher		
E-Mail & Mobile NO.	Sardasht.taher@epu.edu.iq		
Lecturer (Practical)	Sardasht Rifaat Taher		
E-Mail & Mobile NO.	Sardasht.taher@epu.edu.iq		
Websites	https://academicstaff.epu.edu.ig/faculty/sardasht.taher		

Course Catalogue

Course Description	This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the program specification.				
	Course intended for semester (4 th) – (2 nd) stage students in Petroleum				
	Technology- Chemical analyzing department. The course provides the student with a basic knowledge and understanding of				
	the theory and applications of separation techniques in analytical chemistry.				
	The main objective of this course is to familiarize students with the				
Course Objectives	fundamental principles of separation processes used in analytical chemistry such as				
	decantation, centrifugations, filtration, extraction, chromatography, various				
	Distillation and electrophoresis.				
	By completion of the course, students are also expected to gain independent				
	laboratory skills in certain separation techniques and they will have the ability to				
	interpret data from analytical separation methods.				
	Students must restrict by time of lecture.				
	Students must participate in lecture by asking and answering question and				
	explaining their opinions and suggestions.				
Student's					
obligation	Preparing reports, seminars and other activates.				
oongadon	Preparing weekly homework.				
	Participate in all quiz, med term and final exams of the subject without absenting.				
	Discuses students' suggestions, opinions and questions at teacher office hours.				

	White board.
	White board pen.
Required Learning	Data Show.
Materials	Power point presentation.
	papers.
	Posters.

	Task		Weight (Marks)	Due Week	Relevant Learning Outcome
	Paper Review				
	As	Homework	5		
		Class Activity	2		
	Assignments	Report	5		
Evaluation	ıme	Seminar	5		
	nts	Essay			
		Project			
		Quiz	8		
		Lab.	10		
	N	Midterm Exam	25		
		Final Exam	40		
		Total	100		

Importance of separation techniques in Analytical Chemistry in our life. Importance of introducing different methods for separation Analytical Chemistry. Study decantation and sedimentation. Study of types of filtration and centrifugations. Knowledge about types of distillation and extraction. Knowledge about types of chromatography.
Knowledge about types of chromatography.

Course References

Fundamentals of Analytical chemistry Eighth Edition by Douglas A. Skoog, Donald

M.West, F.James Holler and Stanley R. Crouch. (2013)

Chemical Separations: Principles, Techniques and Experiments (Techniques in

Analytical Chemistry) 1st Edition by Clifton E. Meloan. (1999).

Magazines and review (internet):

https://open.umn.edu/opentextbooks/textbooks/486

https://www.slideshare.net/GaneshBhagure/analytical-chemistry-156759597.

Course topics (Theory)	Week	Learning Outcome
Introduction to Separation Techniques		Definition, Role, Importance, Principle and types of Separation Techniques. Magnetic Separation, Decantation and Sedimentation
Sublimation and Filtration	2	Definition, Importance, Principle, advantage and disadvantage of Sublimation. Definition, Role, Importance, Principle, types, advantage and disadvantages of Filtration.
Evaporation and Crystallisation	3	Definition, Importance, Principle, advantage and disadvantage of Evaporation. Definition, Role, Importance, Principle, advantage and disadvantages of Crystallisation.
entrifugation and Distillation	4	Definition, Importance, Principle, Types of Centrifuge, advantage and disadvantage of Centrifugation. Definition, Importance, Principle, Types of Distillation, advantage and disadvantage of Distillation.
Simple and Fractional Distillation	5	Definition, Importance, Principle, advantage and disadvantage of simple and fractional distillation.
Vacuum and Steam Distillation	6	Definition, Importance, Principle, advantage and disadvantage of vacuum and steam distillation.
		Semester 4 th mid Term Exam
Dean Stark Distillation Rotary evaporation	8	Definition, Importance, Principle, advantage and disadvantage of Dean Stark and Rotary evaporation.
Extraction	9	Definition, Importance, Principle, Types, advantage and disadvantage of Extraction.
liquid-liquid, liquid –	10	Definition, Importance, Principle, advantage and disadvantage of liquid-

solid , soild - pahse		liquid, liquid – solid , soild – pahse micro extractions.
micro extractions		
Chromatography	11	Definition, Importance, Principle, Types, advantage and disadvantage of
Ciromatography	11	Chromatography.
Paper and Thin Layer	12	Definition, Importance, Principle, advantage and disadvantage of Paper
chromatography	12	and Thin Layer chromatography.
Colum chromatography	13	Definition, Importance, Principle, advantage and disadvantage of Colum
		chromatography
ion exchange	14	Definition, Importance, Principle, advantage and disadvantage of ion
chromatography	14	exchange chromatography
Semester 4 th Final Exam/ 1 St Turn		
Semester 4 th Final Exam/ 2 nd Turn		

Course topics (Practical)	Week	Learning Outcome			
Sedimentation and Decantation	1				
Centrifugation	2				
Filtration and Vacuum Filtration	30 00				
Sublimation	4				
Liquid- liquid extraction	5				
Liquid – Solid extraction	6				
Semester 4 th mid Term Exam					
Soxhlet extraction	8				
Simple Distillation	9				
Fractional Distillation	10				
Vacuum Distillation	11				
Dean Stark Distillation	12				
Paper and Thin Layer Chromatography	13				
Colom Chromatography	14				
Semester 4 th Final Exam/ 1 St Turn					
Semester 4 th Final Exam/ 2 nd Turn					

Theoretical Examinations	
Q 🖟 Define the following:	[M]
Q Z Choose correct answer for the following blanks:	[M]
Q [3] Answer the following: (explain, enumerate calculation and curves)	[M]
Q [] Answer the following by (True) or (False) then correct (False) answer:	[M]

Practical Examinations	
☐Theoretical – Practical Exam.	
Q 🖟 Define the following:	[(M)]
Q 🖟 Choose correct answer for the following blanks:	[M]
Q 🖟 Answer the following: (explain, enumerate calculation and curves)	[
Q 🖟 Answer the following by (True) or (False) then correct (False) answer:	[M]
□Repeat one of the experiments in the laboratory	

Extra notes:

External Evaluator

I confirmed that the contents of this syllabus are commonly more explicit and follows theprinciples and rules in Oil and Gas Properties subjects.

Lecturer: Dr. Kardo Sardar Mohammed