



Course Description

Analytical Chemistry theoretical, First Course, First Stage

• Educational Institution	Ministry of Higher Education and Scientific Research
• University Department / Center	Alzahrawi University- College of pharmacy
• Course Name / Code	Analytical chemistry , PPCS 11
• Programs in which it is included	Bachelor of Pharmacy
• Available Forms of Attendance	Daily
• Semester / Year	First course-2025/2026
• Total Number of Study Hours	45 hours
• Date of preparing this description	2025-2026
• Course Objectives: To provides students with a sound theoretical back ground in chemical principles that is essential to practice chemical analysis. It enables students to understand the importance of judging the accuracy and precision of experimental data and techniques of quantitative analysis, and also to show that theory frequently served as a useful guide to the solution of analytical problems	
• Learning Outcomes, Teaching and Learning Methods, and Evaluation	

- **Knowledge and Understanding:**
- Basic concepts of analytical chemistry. Applying all methods of analysis qualitatively and quantitatively.

Subject-Specific Skills:

Get experience in drug analysis such as gravimetric, precipitometric, redox.... etc.

Teaching and Learning Methods:

Using white board and projector screen

- **Evaluation Methods:**

- Periodic exams, reports, seminars, routine homeworks, final exams.

- **Thinking Skills:**

- Practical workshops, homework's, exams

Teaching and Learning:**Methods:**

using white board and projector screen. Lectures to distinct students to textbooks, notes and on-line material. Laboratory practice. Assignments and researches done and presented by the students in seminars.

Evaluation Methods:

Periodic exams, seminars, and reports

e. General and Transferable Skills:

Communicate clearly by verbal and written means. Retrieve and evaluate information from different sources to improve professional competencies. Work effectively in a team. Use numeracy, calculation and statistical methods as well as information technology tools. Practice independent learning for continuous professional development. Demonstrate creativity and time management abilities. Implement writing and presentation skills. Demonstrate critical thinking, problem solving and decision making abilities.

- **Course Structure**

Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Lecture	Introduction to Analytical chemistry	Lecture	Quizes and reports
2	3	Lecture	Basic Concepts: Concentration units	Lecture	Quizes and reports
3	3	Lecture	Standards and Solution preparation	Lecture	Quizes and reports
4	3	Lecture	Introduction to Pharmacopoeias	Lecture	Quizes and reports
5	3	Lecture	Pharmacopoeial Monographs & ICH Q2(R1)	Lecture	Quizes and reports
6	3	Lecture	Gravimetric Analysis I	Lecture	Quizes and reports
7	3	Lecture	Gravimetric Analysis II	Lecture	Quizes and reports
8	3	Lecture	Errors in Analytical Chemistry & Gravimetric Analysis	Lecture	Quizes and reports
9	3	Lecture	Volumetric Analysis I: Fundamentals	Lecture	Quizes and reports
10	3	Lecture	Acid–Base Titrations I	Lecture	Quizes and Reports
11	3	Lecture	Acid–Base Titrations II: pH & calculations	Lecture	

12	3	Lecture	Acid–Base Indicators & Pharmaceutical Applications	Lecture	Quizes and Reports
13	3	Lecture	Precipitation Titrations	Lecture	Quizes and Reports
14	3	Lecture	Complexometric Titrations	Lecture	
15	3	Lecture	Integrated Review & Applications		

• Infrastructure	
Required Readings:	References: 1) Fundamentals of Analytical Chemistry – Skoog, West, Holler & Crouch 2) Pharmaceutical Analysis – A.H. Beckett & J.B. Stenlake 3) Quantitative Chemical Analysis – Daniel C. Harris 4) Supplementary: British Pharmacopoeia (BP), United States Pharmacopeia (USP), ICH Q2(R1)
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Molecules journal, Journal of medicinal chemistry.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: Distance education and electronic lectures

• Admission:	
Prerequisites	Admission according to the central plan

Minimum Number of Students	120
Maximum Number of Students	Admission exceeds the capacity plan: 140

Name of the Instructor: Assistant Lecturer Saif yahya ahmed