**Ministry of Higher Education and Scientific Research**
**Scientific Supervision and Scientific Evaluation Apparatus**
**Directorate of Quality Assurance and Academic Accreditation**
**Accreditation Department**

# Academic Programand Course Description Guide (undergraduate study) University of Babylon, college of science- chemistry department Study year:2024-2025


**2024-2025**

# Academic Program Description Form

University Name: university of Babylon

Faculty/Institute: collage of science

Scientific Department: chemistry department

Academic or Professional Program Name: chemistry

Final Certificate Name: .. B.Sc., M.Sc., and ph.D Degrees

Academic System: The academic system of the study is semester

Description Preparation Date:

File Completion Date:

Signature:

Head of Department Name:

Prof. Dr. Abbas Jasim Atiyah

Date:14-11-2024

Signature:

Scientific Associate Name:

Prof. Dr. Ahmed Sadoon Witwit

Date: 14-11-2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Prof. Dr. Hyder Mohammad A-Algeleel

Date:

Signature:

Approval of the Dean

# Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

## Concepts and terminology:

**Academic Program Description:** The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

**Course Description:** Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

**Program Vision:** An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

**Program Mission:** Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

**Program Objectives:** They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

**Curriculum Structure:** All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

**Learning Outcomes:** A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

**Teaching and learning strategies:** They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra–curricular activities to achieve the learning outcomes of the program.

## 1. Program Vision

The chemistry academic staff of the Natural and Behavioral Sciences Division at university of Babylon, college of science) University believe that students come to understand the discipline of chemistry through a combination of course work, laboratory experiences, research, and fieldwork. The combination of instructional methods leads students to a balanced understanding of the scientific methods used by chemist to make observations, develop insights and create theories about chemistry sciences

## 2. Program Mission

The chemistry academic staff pursues a multifaceted charge at (university of Babylon, college of science). The Program seeks to provide all chemistry students with fundamental knowledge of chemistry, as well as a deeper understanding of a selected focus area within the chemical l sciences. The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work as field chemistry specializing in different fields of chemical sciences. The chemistry program also provides the necessary fundamental knowledge of the chemical sciences

## 3. Program Objectives

**The department's general objectives are:**

1. Graduate students with a Bachelor's degree in Chemistry in the following specializations: organic, inorganic, biological, analytical, and physical, by establishing strong scientific curricula consistent with those of leading universities.
2-Providing state institutions with these specializations, as well as graduates holding higher degrees (diploma, master's, and doctorate) in various chemistry specializations, to work in various state institutions, including educational, research, scientific, and service institutions.
3-- Establishing scientific links with other universities to expand the knowledge base of students, professors and their students.
4- Adopting an appropriate atmosphere for developing scientific knowledge and skills and supporting sustainable development goals to serve society and development issues.
5- Working to compete with similar scientific departments in Iraqi public and private universities and achieving advanced positions in the quality of academic education.
6-Contacting relevant government departments (departments of health, environment, water, sewage, agriculture, industry, and oil) to identify the important problems that threaten society and work to find solutions for them through the completion of joint applied research.
7-Classrooms and laboratories developed and equipped with the modern equipment's.

## 4. Program Accreditation

Currently, the program does not have programmatic accreditation, but we aspire to obtain it as soon as possible. The department and college are currently working in this direction.

## 5. Other external influences

Training courses for students to develop their professional skills / Field visits to relevant projects and work sites.

## 6. Program Structure

| Program Structure | Number of Courses | Credit hours | Percentage | Reviews* |
|---|---|---|---|---|
| University requirements | 8 | 13 | 0.089654 | |
| College requirements | 3 | 14 | 0.09655 | |
| Department requirements | 43 | 108 | 0.74482 | |
| Summer training | non | | | |
| others | non | | | |

* This can include notes whether the course is basic or optional.

## 7. Program Description

| year | Course code | Course name | Credit Hours | |
|---|---|---|---|---|
| 1st year | | | theoretical | practical |
| | CHEM1101 | Qualitative Analytical Chem. | 3 | 2 |
| | CHEM1102 | Inorganic1 | 3 | |
| | CHEM1103 | cytology | 2 | 2 |
| | CHEM1104 | Derivatives and integration | 2 | |
| | UOBAB1104 | Democracy and human rights | 2 | |
| | UOBAB1102 | Arabic Language | 2 | |
| | CHEM1201 | Volumetric Analytical Chem. | 3 | 2 |
| | CHEM1202 | Inorganic2 | 2 | |
| | CHEM1203 | physics | 2 | 2 |
| | CHEM1204 | safety and chemical security | 2 | |
| | UOBABb4 | computer 1 | 1 | 2 |
| | UOBABb1101 | English language 1 | 2 | |
| 2nd year | CHEM2301 | Gravitymetric analysis | 2 | 2 |
| | CHEM2302 | Chemistry of represented elements 1 | 2 | 2 |
| | CHEM2303 | Thermodynamics1 | 3 | 2 |
| | CHEM2304 | Organic Chemistry 1 | 3 | 2 |
| | CHEM2305 | Differential equations | 2 | |
| | CHEM2401 | Separation Methods | 2 | 2 |
| | CHEM2402 | Chemistry of represented elements 2 | 2 | 2 |
| | CHEM2403 | Thermodynamics2 | 3 | 2 |
| | CHEM2404 | Organic Chemistry 2 | 3 | 2 |
| | UOBAB2301 | Baath party crimes | 2 | |
| | UOBAB2302 | English Language 2 | 2 | |
| | UOBAB2001 | Arabic Language 2 | | |
| 3rd class | UOBAB0502051 | Inorganic chemistry 5 | 2 | 2 |
| | UOBAB0502052 | Kinetics chemistry | 3 | 2 |

| | | | | |
|---|---|---|---|---|
| | UOBAB0502053 | Organic chemistry 3 | 3 | 2 |
| | UOBAB0502054 | Biochemistry 1 | 2 | 2 |
| | UOBAB0502055 | Industrial chemistry 1 | 2 | |
| | UOBAB0502056 | Elective 2 | 2 | |
| | UOBAB0502061 | Inorganic chemistry 6 | 2 | 2 |
| | UOBAB0502062 | Electrochemistry | 3 | 2 |
| | UOBAB0502063 | Organic chemistry 4 | 3 | 2 |
| | UOBAB0502064 | Biochemistry 2 | 2 | 2 |
| | UOBAB0502065 | Industrial chemistry 2 | 2 | |
| | UOBAB0502066 | Research methodology | 2 | |
| $4^{th}$ class | UOBAB0502071 | Instrumental analysis 1 | 3 | 2 |
| | UOBAB0502072 | Identification 1 | 2 | 2 |
| | UOBAB0502073 | Biochemistry 3 | 2 | 2 |
| | UOBAB0502074 | Industrial chemistry3 | 3 | 2 |
| | UOBAB0502075 | Spectroscopy chemistry | 3 | |
| | UOBAB0502076 | Research project | | 2 |
| | UOBAB0502081 | Instrumental analysis 2 | 3 | 2 |
| | UOBAB0502082 | Identification 2 | 2 | 2 |
| | UOBAB0502083 | Biochemistry 4 | 2 | 2 |
| | UOBAB0502084 | Industrial chemistry 4 | 3 | 2 |
| | UOBAB0502085 | Quantum chemistry | 3 | |
| | UOBAB0502086 | Research project | | 2 |

## 8. Expected learning outcomes of the program

| Skills | Learning outcomes |
|---|---|
| | |
| 1-learning basic science in chemistry<br>2-synthesis of basic compounds<br>3- understanding safety and<br>4-chemical security in chemical labs | 1-student learning basic works in chemical labs<br>2-preparation of some chemical and polymeric compounds<br>3-designing of simple chemical reactors |
| | |
| **Ethics** | |
| 1-Student would learn ethics behavior | |
| 2--learning scientific honesty | |

## 9. Teaching and Learning Strategies

1- In-classroom theoretical lessons with online theoretical lessons

2- In- practical laboratory lessons with extracurricular practical assignments

3- Ongoing reporting on the theoretical and scientific components

4- Library study with daily activities

5- Scientific training trips to relevant work sites

6- Scheduled monthly exams

7- Scheduled daily exams

8- Final theoretical and practical exams

9- In-person classwork

10- Electronic assignments and reports

## 10. Evaluation methods

1-monthly and daily Examination
2-Reports and home work
3-Projects Design
4-Feedback Learning
5--E-Learning using Moodle

## 11. Faculty

### Faculty Members

| Academic Rank | Specialization | | Special Requirements/Skills (if applicable) | | Number of the teaching staff | |
|---|---|---|---|---|---|---|
| | General | Special | | | Staff | Lecturer |
| professor | 12 | 12 | | | staff | |
| Assist. Prof. | 15 | 15 | | | staff | |
| Lecturer | 13 | 13 | | | staff | |
| Assist. Lecturer | 7 | 7 | | | staff | |

## Academic staff

| Out of staff | Staff | Specific specialization | General specialization | Scientific title | Full name | Seq. |
|---|---|---|---|---|---|---|
| | Staff | biochemistry | Chemistry sciences | Professor | Dr. odah Mazil Ysir | 1 |
| | Staff | Analytical chemistry | Chemistry sciences | Professor | Dr. Abbas Nor Mohammad | 2 |
| | Staff | Organic chemistry | Chemistry sciences | Professor | Dr. Sadoon Abid Allah Odah | 3 |
| | Staff | Physical chemistry | Chemistry sciences | Professor | Dr. Abbas Abid Ali Drea | 4 |
| | Staff | Physical chemistry | Chemistry sciences | Professor | Dr. Abbas Jasim Atiyah | 5 |
| | Staff | biochemistry | Chemistry sciences | Professor | Dr. Lemia Abid Almageed Mohammad | 6 |
| | Staff | Physical chemistry | Chemistry sciences | Professor | Dr. Nada Yahya Fairos | 7 |
| | Staff | Inorganic chemistry | Chemistry sciences | Professor | Mr. Salih Hadi Kahdum | 8 |
| | Staff | biochemistry | Chemistry sciences | Professor | Dr. Mahmoud Husain Hedwan | 9 |

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|---|---|---|---|---|---|---|
| | Staff | Organic chemistry | Chemistry sciences | Professor | Dr. Kudair Jwad Kahdum | **10** |
| | Staff | Organic chemistry | Chemistry sciences | Professor | Dr. Mohannad Mosa Kareem | **11** |
| | Staff | Analytical chemistry | Chemistry sciences | Professor | Dr. Ahmed Ali Abid Alsahib | **12** |
| | Staff | Organic chemistry | Chemistry sciences | Assist. Prof. | Dr. Halla Eshkair Luhaimus | **13** |
| | Staff | Organic chemistry | Chemistry sciences | Assist. Prof. | Dr. Shireen Retha Resol | **14** |
| | Staff | Inorganic chemistry | Chemistry sciences | Assist. Prof. | Dr. Saad Medlol Mahdy | **15** |
| | Staff | Analytical chemistry | Chemistry sciences | Assist. Prof. | Miss. Luma Ahmed Mohammad | **16** |
| | Staff | Analytical chemistry | Chemistry sciences | Assist. Prof. | Dr. Ahmed Salih Ferhod | **17** |
| | Staff | Industrial chemistry | Chemistry sciences | Assist. Prof. | Dr. Faris Hammod Mohammad | **18** |
| | Staff | Analytical chemistry | Chemistry sciences | Assist. Prof. | Dr. Ahmed Sadoon Abbas | **19** |
| | Staff | Inorganic chemistry | Chemistry sciences | Assist. Prof. | Dr. Yahya Fahim Obaid | **20** |
| | Staff | Analytical chemistry | Chemistry sciences | Assist. Prof. | Dr. Saba Sahib Mohsin | **21** |
| | Staff | biochemistry | Chemistry sciences | Assist. Prof. | Dr. Rana Abid alaly Kamees | **22** |
| | Staff | Inorganic chemistry | Chemistry sciences | Assist. Prof. | Dr. Angham Ganim Hady | **23** |
| | Staff | Physical chemistry | Chemistry sciences | Assist. Prof. | Mr. Husain Edrees Esmael | **24** |
| | Staff | Computers | Computer engineering | Assist. Prof. | Miss. Ebtisam Abid Alwaheed Rasheed | **25** |
| | Staff | Physical chemistry | Chemistry sciences | Assist. Prof. | Dr. Ahmed Fawzy Halbus | **26** |
| | Staff | Industrial chemistry | Chemistry sciences | Lect. | Dr. Weesam Abid Algaleel Jwad | **27** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Staff | Physical chemistry | Chemistry sciences | Lect. | Mr. Basim Mohammad Hasan | **28** |
| | Staff | biochemistry | Chemistry sciences | Assist. Prof. | Dr. Eyman Hameed Humiady | **29** |
| | Staff | Organic chemistry | Chemistry sciences | Lect. | Miss. Fatima Ali Husain | **30** |
| | Staff | Industrial chemistry | Chemistry sciences | Lect. | Mrs. Rawa Hofdy Zeaoly | **31** |
| | Staff | biochemistry | Chemistry sciences | Lect. | Mrs. Zainab Abbas Jawad | **32** |
| | Staff | Analytical chemistry | Chemistry sciences | Lect. | Miss. Nahla Selman Sadaam | **33** |
| | Staff | Analytical chemistry | Chemistry sciences | Lect. | Mrs. Eynas Jaleel Mahdy | **34** |
| | Staff | Inorganic chemistry | Chemistry sciences | Assist. Lect. | Mr. Husain Abid Alkadum Hasan | **35** |
| | Staff | Organic chemistry | Chemistry sciences | Assist. Lect. | Mr. Eyad Ali Disher | **36** |
| | Staff | Organic chemistry | Chemistry sciences | Assist. Lect. | Mrs. Merwa Abid Alameer Mseer | **37** |
| | Staff | Organic chemistry | Chemistry sciences | Assist. Lect. | Mr. Saleem Husain Shennan | **38** |
| | Staff | biochemistry | Chemistry sciences | Assist. Lect. | Mr. Ameer Athab Abid Alkahdum | **39** |
| | Staff | Physical chemistry | Chemistry sciences | Assist. Lect. | Mrs. Firdos Sami Abid Alameer | **40** |
| | Staff | Analytical chemistry | Chemistry sciences | Lect. | Dr. Rosil Mahdy Obaid | **41** |
| | Staff | Analytical chemistry | Chemistry sciences | Lect. | Dr. Amneen Mohammad Abid Alkareem | **42** |
| | Staff | Organic chemistry | Chemistry sciences | Lect. | Dr. Thoha Rahy Kishash | **43** |
| | Staff | biochemistry | Chemistry sciences | Lect. | Dr. Alla Shaban raheem | **44** |
| | Staff | Physical chemistry | Chemistry sciences | Lect. | Dr. Marwah Mohammad Ali Obiad | **45** |
| | Staff | Analytical chemistry | Chemistry sciences | Assist. Lect. | Mrs. Eyman Abbas Hemzah | **46** |
| | Staff | biochemistry | Chemistry sciences | Assist. Lect. | Miss Fatima Abid Ali Hesony | **47** |
| | | | | | | |

## Professional Development

### Mentoring new faculty members

This can be achieved via participating of staff member in different courses and workshops to improve their abilities in teaching and scientific research

### Professional development of faculty members

Conducting contineous programms regarding with teaching stadd development via participitating in modern teaching and learning methods as well as new electronic learning methods.

## 12. Acceptance Criterion

Our policy depends mainly on the central acceptance that is conducted by MOHER in Iraq, it main condition, the qualified student should pass general secondary national examination with high degree, more than 75%.

## 13. The most important sources of information about the program

- Electronic website of Babylon University,
- -electronic website of college of science

-electronic website of chemistry department

## 14. Program Development Plan

There is an ambitious plan to develop the department's academic and technical aspects, as well as its infrastructure. Additionally, the plan includes developing automation, e-learning, and blended learning.:
A-Short range development plan:
1. Developing and rehabilitating the department's primary and higher education laboratories.
2. Developing and rehabilitating faculty research laboratories.
3. Developing and rehabilitating classrooms.
4. Developing faculty rooms, administration rooms, service rooms, and maintenance rooms.
5. Developing and rehabilitating the department's workshops and warehouses.
B- In the long term, the program development plan includes the following:
1- Establishing new, advanced laboratories of a production nature, such as laboratories for the manufacture of industrial polymers, detergents and perfumes, and glassware.
2- Transitioning to clean energy by establishing solar cell systems.
3. Establishing a new chemical warehouse outside the department's perimeter, with modern specifications.
4. Establishing a wastewater recycling station.
5. Establishing a new building attached to the department.
6. Establishing new scientific branches that meet the needs of the labor market, such as biochemistry

| Program Skills Outline | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Required program Learning outcomes | | | | | | | | | | | | |
| Year/Level | Course Code | Course Name | Basic or optional | Knowledge | | | | Skills | | | | Ethics | | | | |
| | | | | A1 | A2 | A3 | A 4 | B1 | B2 | B3 | B4 | C1 | C2 | C3 | C4 | |
| First class | CHEM1101 | Quantitative analytical chem. | basic | Understand scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * | |
| | CHEM1102 | Inorganic 1 | basic | Understand | Developing individual capabilities | knowing the edges of science | | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | | |
| | CHEM1103 | cytology | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * | |
| | CHEM1104 | Differnation and integration | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * | |
| | UOBAB1104 | Democracy and human rights | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * | |
| | UOBAB1102 | Arabic language 1 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * | |
| | CHEM1201 | Volumetric analytical chem. | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | | |
| | CHEM1202 | Inorganic 2 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | | |
| | CHEM1203 | physics | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CHEM1204 | Safety and chemical security | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBABb4 | Computer 1 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBABb1101 | English language 1 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| Second class | | | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | | Teamwork | academic integrity | * | * |
| | | | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | | | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | CHEM2301 | Gravitymetric analysis | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | CHEM2302 | Chemistry of represented elements 1 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | CHEM2303 | Thermodynamics 1 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | CHEM2304 | Organic Chemistry 1 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | | Teamwork | academic integrity | * | * |
| | CHEM2305 | Differential equations | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502036 | Computer 2 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | CHEM2401 | Separation Methods | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | CHEM2402 | Chemistry of represented elements 2 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CHEM2403 | Thermodynamics 2 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| Third class | CHEM2404 | Organic Chemistry 2 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB2301 | Baath party crimes | elective | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB2302 | English Language 2 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB2001 | Arabic Language 2 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB0502055 | Industrial chemistry1 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502056 | elective2 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB0502057 | Inorganic chemistry6 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502058 | electrochemistry | elective | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB0502061 | Organic chemistry4 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502062 | biochemistry 2 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB0502063 | Industrial chemistry2 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502064 | research methodology | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| Fourth class | UOBAB0502071 | Instrumental analysis1 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some | design of reaction | * | * | Teamwork | academic integrity | * | * |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UOBAB0502072 | Organic identification1 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB0502073 | biochemistry 3 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502074 | Industrial chemistry3 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB0502075 | Quantum chemistry | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502076 | research project | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB0502081 | Instrumental analysis 2 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502082 | Organic identification 2 | elective | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | | | Teamwork | academic integrity | * | * |
| | UOBAB0502083 | biochemistry 4 | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502084 | Industrial chemistry4 | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502085 | Molecular spectroscopy | basic | scientific foundations | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |
| | UOBAB0502086 | Research project | basic | Understand | Developing individual capabilities | knowing the edges of science | * | Preparation of some compounds | design of reaction systems | * | * | Teamwork | academic integrity | * | * |

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

| Curriculum's for first and second level, Bologna system, 2024-2025 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **First level** | | | | | | | |
| **Second course** | | | | **first course** | | | |
| credit ECTS | code | Curriculum name | Seq. | Credit ECTS | code | Curriculum name | Seq. |
| 7 | CHEM1201 | Volumetric Analytical Chem. | 1 | 7.00 | CHEM1101 | Qualitative Analytical Chem. | 1 |
| 7 | CHEM1202 | Inorganic2 | 2 | 7.00 | CHEM1102 | Inorganic1 | 2 |
| 7 | CHEM1203 | physics | 3 | 6.00 | CHEM1103 | cytology | 3 |
| 4 | CHEM1204 | safety and chemical security | 4 | 6.00 | CHEM1104 | Derivatives and integration | 4 |
| 3 | UOBABb4 | computer 1 | 5 | 2.00 | UOBAB1104 | Democracy and human rights | 5 |
| 2 | UOBABb1101 | English language 1 | 6 | 2.00 | UOBAB1102 | Arabic Language 1 | 6 |
| **Second level** | | | | | | | |
| **Second course** | | | | **First course** | | | |
| credit ECTS | code | Curriculum name | Seq. | Credit ECTS | code | Curriculum name | Seq. |
| 6 | CHEM2401 | Separation Methods | 1 | 6.00 | CHEM2301 | Gravitymetric analysis | 1 |
| 6 | CHEM2402 | Chemistry of represented elements 2 | 2 | 6.00 | CHEM2302 | Chemistry of represented elements 1 | 2 |
| 6 | CHEM2403 | Thermodynamics2 | 3 | 6.00 | CHEM2303 | Thermodynamics1 | 3 |
| 6 | CHEM2404 | Organic Chemistry 2 | 4 | 6.00 | CHEM2304 | Organic Chemistry 1 | 4 |
| 2 | UOBAB2301 | Baath party crimes | 5 | 3.00 | CHEM2305 | Differential equations | 5 |
| 2 | UOBAB2302 | English Language 2 | 6 | 3.00 | UOBAB0502036 | Computer 2 | 6 |
| 2 | UOBAB2001 | Arabic Language 2 | 7 | | | | |

# Course Description Form

| 1. Course Name: |
| --- |
| Bologna system |
| 2. Course Code: |
| CHEM1101 |
| 3. Semester / Year: |
| 1st, 2024-2025 |
| 4. Description Preparation Date: |
| 10-10-2024 |
| 5. Available Attendance Forms: |
| classroom, electronic attendance, labwork |
| 6. Number of Credit Hours (Total) / Number of Units (Total): |
| (175/750 hrs), (7/30 ECTS) |
| 7. Course administrator's name (mention all, if more than one name) |

Prof. Dr. Ahmed Sadoon Abbas
Lect. Nahla Salaman Saddam

| 8. Course Objectives |
| --- |

1.The student's knowledge of a general introduction to analytical chemistry.
2. The student distinguishes between the types and categories of analytical chemistry.
3. The student performs gas analysis.
4- The student distinguishes solutions.
5- The student learns about the types of solutions.
6- The student studies strong and weak electrolytes.
7- The student identifies chemical equilibria and their types.
8- The student deduces the water constants, solubility, and ionic product.
9- The student discusses calculating solubility from the solubility product.
10- The student arranges and calculates the solubility product constant from the solubility.
The student lists the applications of the solubility product constant.
12- The student identifies and recognizes buffer solutions.
13- The student studies how to calculate the pH of buffer solutions.
14- The student studies corrections: a general introduction.
15- The student identifies the general requirements for a standard substance and a standard solution.
16- The student identifies the types of constants, including calculating the ionization constant for a strong acid with a strong base.
17- Study the ionization constant of a strong acid with a weak base.
18- The student determines the ionization constant of a weak acid with a strong base.
19- The student measures the precipitation corrections.
20- The student studies the Murmur, Volhard, and Fagan method

## 9. Teaching and Learning Strategies

1-classroom lectures,
2-electronic lectures
3-lab,
4-homework's,
5-daily and weekly reports
6-electronic assignments

## 10. Course Structure

| Week | Hours | Required Learning Outcomes | Unit or subject name | Learning method | Evaluation method |
|---|---|---|---|---|---|
| Week 1 | 5 hrs. | Introduction to analytical chemistry | Introduction to analytical chemistry | | |
| Week 2 | | Types of analytical chemistry | Types of analytical chemistry | | |
| Week 3 | | Methods of Quantitative Analysis | Methods of Quantitative Analysis | | |
| Week 4 | | Gas Analysis | Gas Analysis | | |
| Week 5 | | Solutions | Solutions | | |
| Week 6 | | Types of Solutions | Types of Solutions | | |
| Week 7 | | Classification of Electrolytic solutions | Classification of Electrolytic solutions | | |
| Week 8 | | Chemical Equilibrium | Chemical Equilibrium | | |
| Week 9 | | Equilibrium involving precipitates and their ions, Solubility product & Solubility | Equilibrium involving precipitates and their ions, Solubility product & Solubility | | |

| | | | | | |
|---|---|---|---|---|---|
| Week 10 | | Applications of Solubility-Product Constants | Applications of Solubility-Product Constants | | |
| Week 11 | | Kw,ka,kb for strong and weak acid base | Kw,ka,kb for strong and weak acid base | | |
| Week 12 | | Buffer solution | Buffer solution | | |
| Week 13 | | Buffer types and applications | Buffer types and applications | | |
| Week 14 | | The Effect of Ionic Strength | The Effect of Ionic Strength | | |
| Week 15 | | General review and preparation for the final exam | General review and preparation for the final exam | | |

| | | | | | |
|---|---|---|---|---|---|

## 11. Course Evaluation

1. Daily assignments and daily preparation,
2. Daily oral and written exams
3. Monthly and final exams,
4. Various reports and extracurricular assignments
5. Student contributions to theoretical and practical material and contributions to creative works related to the course material

| **12. Learning and teaching resources** | |
|---|---|
| Main text books | Fundamental Analytical chemistry Donnaled Skkoge 2009 |
| Books and periods | Fundemental Analytical chemistry Donnaled Skkoge 2009 |
| Further reference | Principle in analytical chemistry, 2014 |
| Electronic references | Some scientific electronic websites that are related to the subject |
| | |