



## Course Description Form

### Analytical Chemistry-1 (Practical)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description

|                                                                                                                                                                                                                                                       |                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| 1. Educational Institution                                                                                                                                                                                                                            | Al Zahrawi University           |
| 2. University Department / Center                                                                                                                                                                                                                     | Pharmacy / Analytical Chemistry |
| 3. Course Name / Code                                                                                                                                                                                                                                 | Analytical Chemistry-1 / PPCS11 |
| 4. Programs in which it is included                                                                                                                                                                                                                   | Bachelor of Pharmacy            |
| 5. Available Forms of Attendance                                                                                                                                                                                                                      | Daily                           |
| 6. Semester / Year                                                                                                                                                                                                                                    | First Semester / First Year     |
| 7. Total Number of Study Hours                                                                                                                                                                                                                        | 24 Hours                        |
| 8. Date of preparing this description                                                                                                                                                                                                                 | ٢٠٢٦-٢٠٢٥                       |
| 9. Course Objectives:                                                                                                                                                                                                                                 |                                 |
| To provide students with sound chemical principles necessary for the practice of chemical analysis. It enables students to understand the importance of judging the accuracy and precision of experimental data and quantitative analysis techniques. |                                 |
| 10. Learning Outcomes, Teaching and Learning Methods, and Evaluation                                                                                                                                                                                  |                                 |

### **A. Knowledge and Understanding**

1. How to deal with scientific devices
2. Learning using different scientific techniques
3. Analyzing and discussing the results of pharmaceutical analysis tests.
4. The ability to write and formulate pharmaceutical laboratory reports on the results of scientific examinations and tests and the ability to deduce the results.

### **B. Subject-Specific Skills**

١. Preparing modern designs for the composition and method of its preparation and analyzing and discussing the results of pharmaceutical tests.
٢. Acquiring the skill of writing scientific reports.

### **Teaching and Learning Methods**

١. Theoretical lectures
٢. Laboratory experiments
٣. Seminars and reports
4. Posters and class activities

### **C. Evaluation Methods**

١. Midterm and final exams.
٢. Oral and written exams
٣. Laboratory reports
4. Class activities (posters)

### **D. Thinking Skills**

1. Thinking skills through translating, analyzing, evaluating and extracting ideas.
2. Instilling ethical values for proper dealing with patients.

### **Teaching and Learning Methods**

1. Teaching and lecturing
2. Seminars and homework
3. Tests
4. Field visits
5. Educational posters

### **Evaluation Methods**

Grades, research and reports, tests.

### **e. General and Transferable Skills**

1. Performing practical experiments
2. Acquiring skills in using computers
3. Giving confidence to the student through discussing reports

4. Acquiring skills in writing reports
5. Acquiring skills in leadership
6. Acquiring skills in dealing

| 11. Course Structure |       |                                                       |                                       |                  |                                                                                                                                   |
|----------------------|-------|-------------------------------------------------------|---------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Weeks                | Hours | Required Learning Outcomes                            | Unit Name / Course or Topic           | Learning Methods | Evaluation Method                                                                                                                 |
| 1                    | 2     | Knowledge and Understanding & Subject-Specific Skills | Review of Elementary Concepts         | Practical Lab    | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, oral and written exams. |
| 2                    | 2     | Knowledge and Understanding & Subject-Specific Skills | Laboratory Equipment                  | Practical Lab    | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, oral and written exams. |
| 3                    | 2     | Knowledge and Understanding & Subject-Specific Skills | Quantitative Methods of Analysis      | Practical Lab    | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, oral and written exams. |
| 4                    | 2     | Knowledge and Understanding & Subject-Specific Skills | Volumetric Methods of Analysis        | Practical Lab    | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, oral and written exams. |
| 5                    | 2     | Knowledge and Understanding & Subject-Specific Skills | Calculations in Volumetric Analysis I | Practical Lab    | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, oral and written exams. |

|    |   |                                                                  |                                        |               |                                                                                                                                       |
|----|---|------------------------------------------------------------------|----------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 6  | 2 | <b>Knowledge and Understanding &amp; Subject-Specific Skills</b> | Calculations in Volumetric Analysis II | Practical Lab | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, and oral and written exams. |
| 7  | 2 | <b>Knowledge and Understanding &amp; Subject-Specific Skills</b> | Preparation of 1 N HCl Solution        | Practical Lab | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, and oral and written exams. |
| 8  | 2 | <b>Knowledge and Understanding &amp; Subject-Specific Skills</b> | Standardization of 1 N HCl Solution    | Practical Lab | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, and oral and written exams. |
| 9  | 2 | <b>Knowledge and Understanding &amp; Subject-Specific Skills</b> | Standardization of 1 N NaOH solution   | Practical Lab | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, oral and written exams.     |
| 10 | 2 | <b>Knowledge and Understanding &amp; Subject-Specific Skills</b> | Acid–Base Indicators                   | Practical Lab | Evaluation of laboratory skills to complete the experiment in addition to discussion, laboratory reports, oral and written exams.     |
| 11 | 2 | <b>Knowledge and Understanding &amp; Subject-Specific Skills</b> | Acid–Base Titration Calculations       | Practical Lab | Evaluation of laboratory skills to complete the experiment                                                                            |

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|----|---|------------------------------------------------------------------|--------------------------------------------|--|------------------------------------------------------------------------|
| 12 | 2 | <b>Knowledge and Understanding &amp; Subject-Specific Skills</b> | Determination of Acetic Acid in Vinegar I  |  | in addition to discussion, laboratory reports, oral and written exams. |
| 13 | 2 |                                                                  | Determination of Acetic Acid in vinegar II |  |                                                                        |
| 14 | 2 |                                                                  | Calculation of % Acetic Acid in vinegar    |  |                                                                        |
| 15 | 2 |                                                                  | Comprehensive Practical Review             |  |                                                                        |

| 12. Infrastructure                                                             |                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required Readings:                                                             | <b>References:</b> <ul style="list-style-type: none"> <li>• Harris, Daniel C. 2007. Quantitative chemical analysis. New York, NY: W.H. Freeman and Co</li> <li>• Vogel, A. I., &amp; Mendham, J. (2000). Vogel's textbook of quantitative chemical analysis. Harlow: Prentice Hall.</li> </ul> |
| Special Requirements (Workshops, Journals, Software, Websites):                | Electronic Websites and Internet.                                                                                                                                                                                                                                                              |
| Social Services (Guest Lectures, Professional Training, Field Studies, Others) | Organizing workshops and courses for graduates: ----                                                                                                                                                                                                                                           |

| 13. Admission:             |                                         |
|----------------------------|-----------------------------------------|
| Prerequisites              | Admission according to the central plan |
| Minimum Number of Students | /                                       |
| Maximum Number of Students | Admission exceeds the capacity plan     |

**Name of the Instructor:**

Ass. Prof. Dr. Mohamed Hafez