

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



# **Academic Program and Course Description Guide**

**2024**

## **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.

## Academic Program Description Form

**University Name:** University of Mosul

**Faculty/Institute:** Faculty of Agriculture and forestry

**Scientific Department:** Horticulture and landscape design

**Academic or Professional Program Name:** Plant physiology

**Final Certificate Name:** Bachelor

**Academic System Classes / courses**

**Description Preparation Date:** 2023\9\1

**File Completion Date:** 2024\2\1

**Signature:**

**Head of Department Name:**

**Date:**

**Signature:**

**Scientific Associate Name:**

**Date:**

**The file is checked by:**

**Department of Quality Assurance and University Performance**

**Director of the Quality Assurance and University Performance Department:**

**Date:**

**Signature:**

**Approval of the Dean**

### **1. Program Vision**

Program vision is written here as stated in the university's catalogue and website.

### **2. Program Mission**

Program mission is written here as stated in the university's catalogue and website.

### **3. Program Objectives**

- 1- graduation of students with the ability to work in the field of Agriculture in general and the field of agricultural extension in particular
- 2-graduation of students with the ability to communicate and interact with the rural community
- 3-preparing specialized cadres in agricultural education and extension for Bachelor's and master's degrees
- 4 – work on the dissemination of new agricultural ideas among farmers and agricultural employees through cooperation and coordination with the agricultural departments of the ministry in Nineveh Governorate
- 5-studying the problems related to agricultural extension work, dissemination and adoption of agricultural ideas developed through the research of professors and graduate students
- 6-providing students with a broad and deep understanding of the specialization of agricultural extension

#### 4. Program Accreditation

Does the program have program accreditation? And from which agency?

#### 5. Other external influences

Is there a sponsor for the program?

#### 6. Program Structure

| Program Structure        | Number of Courses | Credit hours | Percentage | Reviews* |
|--------------------------|-------------------|--------------|------------|----------|
| Institution Requirements |                   |              |            |          |
| College Requirements     |                   |              |            |          |
| Department Requirements  |                   |              |            |          |
| Summer Training          |                   |              |            |          |
| Other                    |                   |              |            |          |

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

#### 7. Program Description

| Year/Level       | Course Code    | Course Name      | Credit Hours |           |
|------------------|----------------|------------------|--------------|-----------|
| 2023-2024\ Third | <b>PLPH210</b> | plant physiology | theoretical  | practical |
|                  |                |                  |              |           |

#### 8. Expected learning outcomes of the program

##### Knowledge

Learning Outcomes 1

Learning Outcomes Statement 1

| <b>Skills</b>       |                               |
|---------------------|-------------------------------|
| Learning Outcomes 2 | Learning Outcomes Statement 2 |
| Learning Outcomes 3 | Learning Outcomes Statement 3 |
| <b>Ethics</b>       |                               |
| Learning Outcomes 4 | Learning Outcomes Statement 4 |
| Learning Outcomes 5 | Learning Outcomes Statement 5 |

**9. Teaching and Learning Strategies**

Teaching and learning strategies and methods adopted in the implementation of the program in general.

**10. Evaluation methods**

Implemented at all stages of the program in general.

**11. Faculty**

**Faculty Members**

| Academic Rank | Specialization |         | Special Requirements/Skills (if applicable) | Number of the teaching staff |          |
|---------------|----------------|---------|---|------------------------------|----------|
|               | General        | Special |   | Staff                        | Lecturer |
| Professor     |                |         |   |                              |          |

**Professional Development**

**Mentoring new faculty members**

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

**Professional development of faculty members**



Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

**12. Acceptance Criterion**

**(Setting regulations related to enrollment in the college or institute, whether central admission or others)**

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

State briefly the sources of information about the program.

**14. Program Development Plan**

| Program Skills Outline |             |                  |                   |                                    |    |    |    |        |    |    |    |        |    |    |    |
|------------------------|-------------|------------------|-------------------|------------------------------------|----|----|----|--------|----|----|----|--------|----|----|----|
|                        |             |                  |                   | Required program Learning outcomes |    |    |    |        |    |    |    |        |    |    |    |
| Year/Level             | Course Code | Course Name      | Basic or optional | Knowledge                          |    |    |    | Skills |    |    |    | Ethics |    |    |    |
|                        |             |                  |                   | A1                                 | A2 | A3 | A4 | B1     | B2 | B3 | B4 | C1     | C2 | C3 | C4 |
| 2023-2024<br>Second    | PLPH210     | Plant physiology | standerd          | ✓                                  | ✓  | ✓  | ✓  | ✓      | ✓  | ✓  | ✓  | ✓      | ✓  | ✓  | ✓  |
|                        |             |                  |                   |                                    |    |    |    |        |    |    |    |        |    |    |    |
|                        |             |                  |                   |                                    |    |    |    |        |    |    |    |        |    |    |    |
|                        |             |                  |                   |                                    |    |    |    |        |    |    |    |        |    |    |    |
|                        |             |                  |                   |                                    |    |    |    |        |    |    |    |        |    |    |    |

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

## Course Description Form

1. Course Name: Plant physiology

2. Course Code: **PLPH210**

3. Semester / Year: **2023–2024**

4. Description Preparation Date: **2023 /9/1**

5. Available Attendance Forms: in person

6. Number of Credit Hours 2 theoretical + 3 practical (5) / Number of Units (3.5)

7. Course administrator's name (mention all, if more than one name)

Name: Lecturer Doctor Ragheed Hamza Mohammed, Lecturer Doctor Ahmed Abd-AlRaheem Mohammed

Email: [ragheed\\_alsuitan@uomosul.edu.iq](mailto:ragheed_alsuitan@uomosul.edu.iq) [Ahmed79@uomosul.edu.iq](mailto:Ahmed79@uomosul.edu.iq)

8. Course Objectives

**Enabling the student to understand and comprehend what is related to plant physiology and its relationship to other sciences**

**Enabling the student to know the most important scientific methods in learning about plant physiology**

**Enabling the student to become familiar with the concept of plant physiology**

**Enabling the student to be able to investigate plant cells and all phenomena related to plant physiology**

**• The student can explain all aspects of plant life through plant physiology**

9. Teaching and Learning Strategies

- Interactive lecture
- Brainstorming
- Dialogue and discussion
- Field Training
- Practical exercises
- Field project
- Self-education

## 10. Course Structure

| Week | Hours         | Required Learning Outcomes  | Unit or subject name             | Learning method   | Evaluation method           |
|------|---------------|---|----------------------------------|---|-----------------------------|
| 1    | 2 Theoretical | A1: Learn about the concept of plant physiology<br>B1: He possesses the practical and mental knowledge and concepts that help him in studying plant physiology<br>D3: Community members participate and work to educate them about the importance of plant physiology and its impact on controlling pollution.<br>E1: It contributes to enhancing the values of science among community members and making them aware of the importance of plant physiology and increasing green spaces to improve the environment and serve society. | Introduction to plant physiology | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|      | 3 Practical   | A1: Learn about the types of microscopes, writing the parts of the microscope, and how the microscope works<br>A2: Count the parts of the microscope  | Microscope installation          | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 2    | 2 Theoretical | A2: Defines water absorption systems and their importance and environmental aspects<br>B1: He possesses practical and mental knowledge and concepts that help him know the relationship of plants to water<br>C5: Successfully balances the investment, use and employment of plants in accordance with their relationship with water   | Plant relationship with water    | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |

|   |               |   |  |   |                             |
|---|---------------|---|--|---|-----------------------------|
|   | 3 Practical   | A1: Defines a plant cell<br>A2: List the components of a plant cell<br>4A: Compare the meristematic and adult cells   | Studying the plant cell and its characteristics preparing slides, and revealing the cell components through practical experiments through the microscope | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 3 | 2 Theoretical | A2: Determines the rising sap systems in the plant  | Xylem sap  | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|   | 3 Practical   | A1: He knows every method of expressing the concentrations of solutions<br>C4: Prepare solutions of different percentages, molarity, molarity, and standard<br>D1: Acquiring the skills of preparing various solutions to treat plants with                                     | Scientific experiment on methods of expressing the concentrations of solutions   | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 4 | 2 Theoretical | A2: Determines the systems of water rising to the top of the plant<br>C4: Recognizes the anatomical structure of the bark<br>D3: Recognizes the elements of the cortex<br>E1: Contributes to the recognition of phloem transport  | Phloem sap   | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|   | 3 Practical   | A1: He knows every type of solution<br>A2: List the characteristics of each type of solution<br>C4: Identify and prepare true solutions, colloidal and emulsion<br>C5: Distinguish between true, colloidal and emulsion solutions   | Scientific experiment to prepare real and colloidal solutions, emulsions and colloid   | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 5 | 2 Theoretical | C4: Draws up plans and programs for development in the field of plant transpiration<br>D3: Community members participate and work to educate them about the importance of transpiration in plants and its impact on controlling irrigation.<br>E1: Dissects the stomatal system | Transpiration in plant   | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|   | 3 Practical   | A1: Knows every phenomenon of colloids  | Scientific experiment on the physiological   | Interactive lecture, brainstorming, dialogue                                | semester test 1, final test |

|   |               |   |  |   |                             |
|---|---------------|---|--|---|-----------------------------|
|   |               | A2: List the properties of colloids<br>D1: Acquire skills in stabilizing colloids through scientific experiments  | properties of the Tandall phenomenon                 | and discussion, self-learning,  |                             |
| 6 | 2 Theoretical | A2: Determines the types of mineral nutrition in plants C4: Draws up plans and programs for development in the field of plant nutrition D1: Acquiring the communication skills necessary to deal with confidence and certainty at the individual and group levels D3: Community members participate and work to educate them about the importance of plant nutrition and its role in regulating growth E1: Contributes to identifying vitamins necessary for growth and development | Mineral nutrition in plants                          | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|   | 3 Practical   | A1: Diffusion is known A2: Enumerates the laws of diffusion C2: Conduct diffusion experiments   | Scientific experiment on the phenomenon of diffusion | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 7 | 2 Theoretical | A3: He knows the enzyme and what it is composed of C4: splitting enzymes C5: called enzymes   | Plant enzymes  | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|   | 3 Practical   | A1: Learn about the devices used in measurement, the measurement methods used and their steps   | Scientific visit to laboratories                     | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 8 | 2 Theoretical | A3: Learn about photosynthesis and its effect on plant growth and development C4: Identify the factors affecting photosynthesis   | Photosynthesis                                       | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|   | 3 Practical   | A1: Identify the types of plasma cells that occur in cells and the factors that cause them A2: Explain the reasons for this phenomenon  | Plasmolysis phenomenon in plants                     | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 9 | 2 Theoretical | A4: Learn about the concept of plant respiration C3: He uses the information he needs   | Respiration in plants                                | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |

|    |               |   |  |   |                             |
|----|---------------|---|--|---|-----------------------------|
|    |               | and what is available to him to master his work   |  |   |                             |
|    | 3 Practical   | A1: The student knows the phenomenon of imbibition and the phenomenon of osmosis and recognizes the types of cell membranes in plants.<br>A2: Enumerates the factors affecting each phenomenon<br>C2: Conducts scientific experiments in osmosis      | Scientific experiment on osmosis and semi-permeable membrane | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 10 | 2 Theoretical | A2: Defines different definitions of growth<br>C5: Successfully balances the investment, use, and employment of plants to suit growth processes   | Growth in plants   | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|    | 3 Practical   | A1: The student knows the term permeability<br>A2: Enumerate the factors affecting membrane permeability<br>C2: identifies substances that penetrate quickly into the plant and substances that are slow to penetrate                                 | Scientific experiment on permeability                        | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 11 | 2 Theoretical | A2: Learn about sensation and movement in plants and their importance in plant growth and development<br>C5: Successfully balances the investment and use of movement and sensation in the plant and employs them in accordance with growth processes | Sensation and movement in plants                             | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|    | 3 Practical   | A1: The student knows the stomata<br>A2: The student explains the structure of the stoma and enumerates the factors affecting the opening and closing of the stomata<br>C2: Explains the stomatal system  | The stomatal system  | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
| 12 | 2 Theoretical | A2: Learn about Verbalization and its   | Verbalization  | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |

|    |               |   |   |  |                             |
|----|---------------|---|---|--|-----------------------------|
|    |               | importance in crop flowering<br>C5: Successfully balances the investment and use of plants and their employment in accordance with their Verbalization requirements to increase production  |   |  |                             |
|    | 3 Practical   | A1: The student knows the phenomenon of transpiration<br>2A: Enumerates and explains methods for measuring transpiration rate<br>C2: Explains the stomatal system   | Transpiration measurement   | Interactive lecture, brainstorming, dialogu and discussion, self-learning, | semester test 1, final test |
| 13 | 2 Theoretical | A2: It determines the type of nutrition and nutrients the plant needs for growth and development<br>C3: He uses the information he needs and what is available to him to master his work  | Mineral nutrition in plants   | Interactive lecture, brainstorming, dialogu and discussion, self-learning, | semester test 1, final test |
|    | 3 Practical   | A1: The student learns about the causes and times of this phenomenon and the factors causing it<br>C2: Conducts scientific experiments on the phenomena resulting from radical pressure<br>C4: Uses special devices to measure dissolved solids in plants | Phenomena resulting from root pressure and measurement of dissolved solids in plants  | Interactive lecture, brainstorming, dialogu and discussion, self-learning, | semester test 1, final test |
| 14 | 2 Theoretical | C3: He uses the information he needs and what is available to him to master his work<br>C5: Successfully balances the investment and use of ornamental plants and uses them to adapt to drought and heat tolerance processes.                             | Adapt to drought and heat   | Interactive lecture, brainstorming, dialogu and discussion, self-learning, | semester test 1, final test |
|    | 3 Practical   | A1: The student explains the steps for estimating the leaf area of plants, as well as the steps for estimating plant pigments and the equations related to that.  | Measuring plant leaf area and estimating plant pigments (chlorophyll and xanthophyll) | Interactive lecture, brainstorming, dialogu and discussion, self-learning, | semester test 1, final test |



|    |               |   |                                  |   |                             |
|----|---------------|---|----------------------------------|---|-----------------------------|
|    |               | C4: Draw plans and programs for the estimation of plant dyes<br>C5: Successfully balances the increase in the leaf area of the plant  |                                  |   |                             |
| 15 | 2 Theoretical | C4: Draws up plans and programs for development in the field of adaptation to salinity and light<br>C5: Successfully balance the investment and use of ornamental plants and their adaptations  | Adaptation to salinity and light | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |
|    | 3 Practical   | A1: The student learns about the benefits of the respiration process in plants and how it occurs, along with an explanation of methods for measuring respiration rate.<br>C5: Differentiate between aerobic and anaerobic respiration | Measuring plant respiration      | Interactive lecture, brainstorming, dialogue and discussion, self-learning, | semester test 1, final test |

### 11. Course Evaluation

| seq | Evaluation methods         | Evaluation date (week)           | Grade | Relative weight % |
|-----|----------------------------|----------------------------------|-------|-------------------|
| 1   | Report 1                   | fourth week                      | 2.5   | 2.5               |
| 2   | Report 2                   | fifth week                       | 2.5   | 2.5               |
| 3   | Short test (1)             | sixth week                       | 2     | 2                 |
| 4   | Quiz Short test (2)        | fourteenth week                  | 2     | 2                 |
| 5   | Quiz Short test (3)        | fifteenth week                   | 1     | 1                 |
| 6   | Semester test (1)          | sixth week                       | 7.5   | 7.5               |
| 7   | Semester test (2)          | eleventh week                    | 7.5   | 7.5               |
| 8   | Final theoretical test     | Final semester exams             | 40    | 40                |
| 9   | Practical field project    | fifteenth week                   | 5     | 5                 |
| 10  | Field evaluation           | third and fifth week             | 2     | 2                 |
| 11  | Short test (1)             | first week                       | 1     | 1                 |
| 12  | Quiz Short test (2)        | fourth week                      | 0.5   | 0.5               |
| 13  | Quiz Short test (3)        | fourteenth week                  | 2.5   | 2.5               |
| 14  | Live drawings and homework | Weeks 6, 8, 9, 10, 11, 12 and 13 | 2.5   | 2.5               |
| 15  | Final practical test       | Final semester exams             | 2     | 2                 |
|     | Total                      | 100                              | 100%  | 100%              |

### 12. Learning and Teaching Resources

|                                  |   |
|----------------------------------|---|
| Main references<br>(sources)     | <ul style="list-style-type: none"> <li>- Muhammad, A. A. K. 1988. Plant physiology. part One. Dar Al-Kutub for Printing and Publishing - University of Mosul - Republic of Iraq.</li> <li>- Muhammad, A.A. K. 1988. Plant physiology. The second part. Dar Al-Kutub for Printing and Publishing - University of Mosul - Republic of Iraq.</li> <li>- Muhammad, A. A. K. 1988. Plant physiology. the third part. Dar Al-Kutub for Printing and Publishing - University of Mosul - Republic of Iraq.</li> </ul> |
| Plant physiology and development | Plant physiology and development  |
| Electronic Websites              | Referenc <a href="https://exa.unne.edu.ar/biologia/fisiologia.vegetal/PlantPhysiologyTaiz2002.pdf">https://exa.unne.edu.ar/biologia/fisiologia.vegetal/PlantPhysiologyTaiz2002.pdf</a>  |