



## Academic Program Description Form

### Master's Program in Food Science

**University Name:** University of Mosul

**College / Institute:** College of Agriculture and Forestry

**Scientific Department:** Department of Food Science

**Academic Program Name:** Master of Food Science

**Final Degree Name:** Master of Food Science

**Study System:** Semester (Course) System

**Program Accreditation:** None

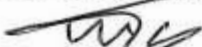
**Description Preparation Date:** 1/9/2025

**File Completion Date:** 1/9/2025



**Head of Department**

Asst. Prof. Dr. Taha Mohammed Taki

**Signature** 

**Date:** 1/9/2025

**Associate Dean for Scientific Affairs**

Prof. Dr. Hamid Hammoud Ali

**Signature** 

**Date:** 1/9/2025

**The file was audited by Quality Assurance and University Performance Evaluation Division**

**Name of the Director of the Quality Assurance and University Performance Evaluation Division:**

Assistant Lecturer: Oday Abdulhadi Adday

Quality Assurance Unit Officer: Asst. Prof. Dr. Ramia Amer Khalil

**Signature** 

**Date:** 1/9/2025



  
A.M.

Approval of the Dean  
Prof. Dr. Ali Farouq Al-Ma'athedi

### **1. Program Vision**

To achieve leadership in applied education and scientific research in the field of food science, excelling in the preparation of highly competent graduates, and actively contributing to food security, sustainability, and community service at both local and regional levels.

### **2. Program Mission**

The Department of Food Science is committed to preparing graduates who are distinguished both academically and practically, equipped with modern applied and professional skills, and dedicated to professional ethics and sustainability. This is achieved through a stimulating educational and research environment that meets labor market needs and contributes to community service.

### **3. Program Objectives**

1. Enable graduates to master fundamental and advanced concepts in food science and apply them practically in food manufacturing and analysis sectors, allowing them to perform professionally within the first three years after graduation.
2. Develop students' abilities to design and implement research projects and to innovate food products using modern technologies, with the aim of increasing their participation in scientific conferences and events by 30% during their study period.
3. Strengthen students' commitment to professional values and ethics by integrating topics of professional conduct and safety across all applied courses, with a target compliance rate of no less than 90% in practical behavioral assessments.
4. Prepare graduates with effective communication, teamwork, and problem-solving skills through group projects, scientific presentations, and field reports, evaluated at least twice throughout the program.
5. Encourage students to engage in lifelong learning and professional self-development by participating in accredited training programs or online learning platforms, with a minimum participation rate of 60% before graduation.

### **4-Program Accreditation**

None.

## 5-Other External Influences

The Master of Science in Food Science program is influenced by the demands of the food industry job market and the needs of governmental and private sector institutions involved in food production, processing, and control. It also incorporates the latest scientific and technological advancements in food safety, food processing technologies, food analysis, food biotechnology, and quality assurance. Furthermore, the program adheres to national legislation and local and international standards related to food safety and quality, as well as food security and sustainability requirements, thereby aligning its outcomes with societal needs and economic and agricultural development plans.

### Program Structure

| Program Structure        | No. of courses | Credit Units | Percentage | Notes |
|--------------------------|----------------|--------------|------------|-------|
| Institution Requirements |                |              |            |       |
| College Requirements     | 3              | 2            | %7.4       | core  |
| Department Requirements  | 10             | 25           | %92.6      | core  |
| Master's. Thesis         |                | -            |            | -     |

Graduation requirements: Successful completion of (36) credit hours distributed as (13 credits in the first semester + 14 credits in the second semester during the preparatory year) + (9) credits for the Master's thesis, distributed over the research year across its two semesters.

\*\* Notes may indicate whether the course is core or elective.

## 6. Program Description (Courses) 2025-2026

| Level / Year                        | Course Code | Course Title                        | Requirement | Credit Hours           |
|-------------------------------------|-------------|-------------------------------------|-------------|------------------------|
| Preparatory Year<br>First Semester  | Ag.Co. 601  | Computer Science 2                  | Core        | 2 Theory               |
|                                     | Ag.Co. 604  | Seminars 1                          | Core        | 1 Theory               |
|                                     | Ag.F.601    | Advanced Food Chemistry 1           | Core        | 2 Theory + 3 Practical |
|                                     | Ag.F.602    | Advanced Biochemistry               | Core        | 2 Theory + 3 Practical |
|                                     |             | Elective Course 1                   |             | 2 Theory + 3 Practical |
|                                     |             | Elective Course 2                   |             | 2 Theory + 3 Practical |
| Preparatory Year<br>Second Semester |             | English Language 2                  | Core        | 2 Theory               |
|                                     | Ag.Co. 603  | Research Methodology 1              | Core        | 2 Theory               |
|                                     | Ag.F.603    | Advanced Food Chemistry 2           | Core        | 2 Theory + 3 Practical |
|                                     | Ag.F.604    | Advanced Food Analysis              | Core        | 2 Theory + 3 Practical |
|                                     |             | Elective Course 1                   |             | 2 Theory + 3 Practical |
|                                     |             | Elective Course 2                   |             | 2 Theory + 3 Practical |
| Elective Courses                    | Ag.F.605    | Food Microbiology 1                 | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.606    | Advanced Dairy Microbiology         | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.607    | Modern Food Preservation Techniques | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.608    | Enzymes                             | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.609    | Food Quality Analysis               | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.610    | Industrial Fermentation             | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.611    | Advanced Food Processing            | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.612    | Dairy Processing                    | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.613    | Cheese Production                   | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.614    | Human Nutrition 1                   | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.615    | Oils and Fats Technology            | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.616    | Liquid Milk                         | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.617    | Grain Technology                    | Elective    | 2 Theory + 3 Practical |
|                                     | Ag.F.618    | Food Care and Storage               | Elective    | 2 Theory + 3 Practical |

|                                     |          |                               |          |                        |
|-------------------------------------|----------|-------------------------------|----------|------------------------|
| Second Year First & Second Semester | Ag.F.619 | Meat Chemistry and Processing | Elective | 2 Theory + 3 Practical |
|                                     | Ag.F.620 | Fermented Dairy Products      | Elective | 2 Theory + 3 Practical |
|                                     | Ag.F.621 | Food Plant Engineering        | Elective | 2 Theory + 3 Practical |
|                                     | --       | Master's Thesis Research      | Core     | --                     |

## 7. Expected Program Learning Outcomes

### Student Learning Outcomes (SLOs):

#### First: Knowledge and Understanding

| Code      | Learning Outcome                                                                                                                                                                            |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A1</b> | The student will learn fundamental and advanced concepts in food science and apply theoretical knowledge to solve problems related to food safety, public health, and relevant legislation. |
| <b>A2</b> | They will identify complex problems in food technology and understand how to address them based on acquired knowledge.                                                                      |
| <b>A3</b> | They will learn the basics of food project design and management and propose practical ideas that support sustainability in the food sector.                                                |

#### Second: Intellectual (Cognitive) Skills

| Code      | Learning Outcome                                                                                                                           |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>B1</b> | It selects modern design methods and techniques to address challenges in food production and its various stages under specific conditions. |
| <b>B2</b> | It uses scientific knowledge to determine appropriate preservation methods and suitable packaging materials for food products.             |

#### Third: Professional (Practical) Skills

| Code      | Learning Outcome                                                                                                                             |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>C1</b> | Employs modern tools and techniques in food analysis and conducts laboratory experiments to interpret results and ensure quality and safety. |
| <b>C2</b> | Manages food manufacturing or processing operations in real-world environments and ensures compliance with quality standards.                |

#### Fourth: Communication & Information Technology Skills (General and Transferable Skills)

| Code      | Learning Outcome                                                                                                                                     |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>D1</b> | Communicates effectively both orally and in writing, works collaboratively within multidisciplinary teams, and presents work results professionally. |
| <b>D2</b> | Keeps abreast of changes and developments in food science and nutrition and translates them into professional skills relevant to the job market.     |

#### Values

|           |                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>E1</b> | Takes individual and collective responsibility for task execution and adheres to professional ethics and sustainability practices. |
| <b>E2</b> | Continuously develops professionally and recognizes the importance of                                                              |

lifelong learning in the fields of food and related regulatory frameworks.

## 8. Teaching and Learning Strategies

1. Interactive lectures to present advanced concepts and theories in Food Science.
2. Scientific seminars to develop critical thinking and scientific analysis skills and discuss the latest research.
3. Advanced laboratory training to develop practical skills in diagnosis, isolation, molecular techniques, and specialized analyses.
4. Scientific presentations and discussions to develop academic communication skills.
5. E-learning and blended learning through the use of scientific databases and digital learning platforms.
6. Direct academic supervision of dissertation and thesis projects to ensure the achievement of the targeted learning outcomes.

## Assessment Methods

Short tests, semester examinations, report evaluation, discussion evaluation, and research-report evaluation.

## Teaching Staff

| Academic Rank       | General Specialization | Specific Specialization | Special Requirements / Skills | Staff | Lecturer |
|---------------------|------------------------|-------------------------|-------------------------------|-------|----------|
| Professor           |                        | 1                       |                               | 1     |          |
| Assistant Professor |                        | 7                       |                               | 7     |          |
| Lecturer            |                        | 12                      |                               | 12    |          |
| Assistant Lecturer  |                        | 11                      |                               | 11    |          |

## Professional Development

### Orientation of new faculty members:

Teaching in the program requires that the faculty member holds an academic title of at least assistant professor, and that at least two years have passed since obtaining their last academic degree or promotion.

### Professional development of faculty members:

- organize periodic training programs in modern teaching methods and active learning.
- Developing research skills and scientific publishing in reputable international journals.
- Training faculty members on the use of educational technologies and digital platforms.
- Enhancing the academic supervision skills of postgraduate students.



- Participation in local and international scientific workshops and conferences.
- Supporting research cooperation with specialized centers and universities.

#### Admission Criteria

1. The applicant must hold a Bachelor's degree in Food Science from an Iraqi or a recognized university, with an overall average of no less than 65%.
2. The applicant must hold certificates of Arabic and English language skills and of computer skills.
3. The applicant must pass the competitive examination set by the department, together with a personal interview.

#### Main Sources of Information about the Program

The official website of the college / university.  
 The academic program guide.  
 The course descriptions.  
 The academic advising guide for students.  
 The university's postgraduate studies regulations.  
 Previous postgraduate theses and dissertations.  
 Scientific workshops, seminars, and academic conferences related to the program.

#### Program Development Plan

- Periodically updating the curricula in line with scientific developments and modern technologies in Food Science.
- Strengthening the practical and applied dimension by increasing laboratory and field training and linking courses to real agricultural problems.
- Developing the research infrastructure by upgrading laboratories and providing modern equipment and technologies.
- Raising faculty competence through professional-development programs, continuous training, and academic exchange.
- Promoting scientific research and international publishing, and encouraging applied research with direct impact on the agricultural sector.
- Expanding scientific partnerships with local and international universities and research centers.
- Developing the e-learning system and employing modern technologies in teaching and evaluation.
- Updating evaluation and examination methods to ensure accurate and objective measurement of learning outcomes.
- Enhancing students' participation in conferences, seminars, and research projects.
- Conducting a periodic review of the program based on feedback from students, graduates, and the labor market.

## Curriculum Map: Consistency Matrix of Courses vs. Program Learning Outcomes

| Course code                          | Course Name                         | A1 | A2 | A3 | B1 | B2 | C1 | C2 | D1 | D2 | E1 | E2 |
|--------------------------------------|-------------------------------------|----|----|----|----|----|----|----|----|----|----|----|
| <b>Basic college requirements</b>    |                                     |    |    |    |    |    |    |    |    |    |    |    |
| Ag.Co.601                            | Computer Science 2                  |    |    | ✓  |    | ✓  | ✓  |    | ✓  | ✓  |    | ✓  |
| Ag.Co.603                            | Research Methodology 1              | ✓  | ✓  | ✓  | ✓  |    | ✓  |    | ✓  | ✓  | ✓  | ✓  |
| Ag.Co.604                            | Seminars 1                          | ✓  | ✓  |    | ✓  |    |    |    | ✓  | ✓  | ✓  | ✓  |
| —                                    | English Language 2                  | ✓  |    |    |    |    |    |    | ✓  | ✓  |    | ✓  |
| <b>Basic department requirements</b> |                                     |    |    |    |    |    |    |    |    |    |    |    |
| Ag.F.601                             | Advanced Food Chemistry 1           | ✓  | ✓  |    | ✓  | ✓  | ✓  |    |    | ✓  | ✓  |    |
| Ag.F.602                             | Advanced Biochemistry               | ✓  | ✓  |    | ✓  |    | ✓  |    |    | ✓  | ✓  | ✓  |
| Ag.F.603                             | Advanced Food Chemistry 2           | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.604                             | Advanced Food Analysis              | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| Thesis                               | Master's Thesis                     | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| <b>Elective Courses</b>              |                                     |    |    |    |    |    |    |    |    |    |    |    |
| Ag.F.605                             | Food Microbiology 1                 | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  |    |
| Ag.F.606                             | Advanced Dairy Microbiology         | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.607                             | Modern Food Preservation Techniques | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.608                             | Enzymes                             | ✓  | ✓  |    | ✓  |    | ✓  |    |    | ✓  | ✓  | ✓  |
| Ag.F.609                             | Food Quality Analysis               | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| Ag.F.610                             | Industrial Fermentation             | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.611                             | Advanced Food Processing            | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| Ag.F.612                             | Dairy Processing                    | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.613                             | Cheese Production                   | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.614                             | Human Nutrition 1                   | ✓  | ✓  |    | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |
| Ag.F.615                             | Oils and Fats Technology            | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.616                             | Liquid Milk                         | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.617                             | Grain Technology                    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.618                             | Food Care and Storage               | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.619                             | Meat Chemistry and Processing       | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.620                             | Fermented Dairy Products            | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |
| Ag.F.621                             | Food factory engineering            | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |

Note: The core courses ensure coverage of all program learning outcomes, while the elective courses strengthen the student's specialization according to their scientific orientation. Contribution marks remain subject to review by course instructors in light of the approved syllabi.