

In the Name of God

**Islamic Republic of Iran
Ministry of Health and Medical Education
Deputy for Education**

**Food Science & Technology (Quality
Control and Hygiene)
Degree: Bachelor of Science (BSc)**

Total Course Credits

- General Courses: 22
- Basic Courses: 29
- Principal Courses: 26
- Specialized Core Course: 33
- Non-Core Course: 4
- Internship: 16
- **Total: 130**

Program Description

Continuous Bachelor's degree in Food Science & Technology (Quality Control and Hygiene), is a branch of applied science in which the graduates get familiar with the latest scientific and applied achievements in food safety and quality control. They can play an effective role in producing safe food products with better quality and the least wastes. This field of study benefits from many disciplines such as chemistry, biochemistry, biology, and engineering to better understand food properties and processes conditions. Its ultimate goal is improving food products quality, developing safe and nutritious foods and introducing innovative packaging.

Course duration: 4 years (8 semesters)

The Aims of the Course:

- Training learners who play a fundamental role in the control and safety of food products by performing physical, chemical, microbial and sensory experiments.
- Training learners who can identify and measure food compounds and ingredients using precise laboratory methods.

- Training learners who can control food production in accordance with national and international standards and regulation and based on the result and analysis of the control, guarantee the quality of the food product.
- Training learners who can cooperate in the production of new products and preventing food waste.
- Training learners who provide high nutritional value products using enrichment process in order to maintain and improve the health of society.
- Training learners who can make evolution in the food production technology by recognizing the new principles of packaging.
- Training learners who can identify the negative effects of various processes on nutritional value of food products and try to improve these processes.

Admission Requirements:

Student seeking admission to food science and technology (quality control and hygiene) must follow the admission procedures for international students and comply with the admission requirements specified by the universities offering this program.

Expected Competencies at the End of the Program General Competencies*

General competencies expected of the graduates include:

- Communication Skills
- Education
- Research and the scientific writing
- Critical thinking and problem solving skills
- Professionalism

Specific Competencies and Skills

At the end of the program learners will be competent in the following skills:

- A) The role of the expert in the country's food and nutrition system
 - Having a professional role in the decision-making and executive centers of the country's food and nutrition system
 - Monitoring the collection and recording of food contamination and foodborne diseases reports
 - Cooperation in the drafting of food regulations and standards

- B) The role of technical responsibility in food production units
 - Supervision and control of raw materials, food processing steps and the final product
 - Monitoring and controlling the function of machines, device and equipment and safety systems in production units
 - Supervision and control of food formulation to produce healthy and high-quality food

- C) The role of research cooperation in food research centers
 - Performing special experiments to identify food features
 - Evaluation and comparison of food products with national and international regulations and standards
 - Having a responsibility in reporting the real results of the food product analysis

- D) The role of educational cooperation in educational laboratories
 - Ability to conduct necessary experiments to decompose and analyze of food products
 - Trying to eliminate/improve product defects to achieve the desired results.

- E) The role of educational cooperation in educational centers
 - Ability to transfer knowledge to learner
 - Having a key role in increasing awareness and attitude of community about the food safety

Educational Strategies, Teaching & Learning Methods (aligned with the expected competencies):

The overall educational strategies of teacher-centered and student-centered according to the type of class and the number of students are as follows:

- Creating a connection between theoretical and practical courses (Integration) to improve skill level of students.
- Continuous and active participation of the graduates to carry out seminars, projects and conferences related to the field and carrying out practical research in food production, research and training centers as an assignment.
- Using continuous training courses and retraining in accordance with the community demand in order to improve knowledge about the foodstuff and food processing.

Student Assessment Types and Methods (aligned with the expected competencies):

Based on the type of courses, encouraging and motivation of students to learn deeply, the assessment methods can be named as follows:

Theoretical courses: assignment (lectures and seminar), formative (quizzes and midterm exam)

and summative (final exam)

Practical courses: observation of students' performance throughout the program, objective structured examination such as OSPE (objective structured practical examination), DOPS (directly observed procedural skills)

Internship courses: log book-based assessment, reports and oral exam

* With regard to the objectives of the program concerning students' professional behavior, it is necessary to assess their behavior and conduct summatively and continuously throughout the course of study.

Ethical Considerations*

*Note: The related document(s) can be found at <http://hcmeq.behdasht.gov.ir/>.

The overall structure of the course:

Table 1. General Courses/ Compensatory Courses

Code	Course Title	Course Credits			Credit Hours			Prerequisite
		Total	Theoretical	Practical	Total	Theoretical	Practical	
1	Two Courses from Islamic Theories Courses*	4	4	-	68	68	-	-
2	One course from Islamic Ethics Courses*	2	2	-	34	34	-	-
3	One Course from Islamic Revolution of Iran Courses*	2	2	-	34	34	-	-
4	One Course from Islamic History and Civilization Courses*	2	2	-	34	34	-	-
5	One Course from Islamic Resources Courses*	2	2	-	34	34	-	-
6	Persian Literature	3	3	-	51	51	-	-
7	General English	3	3	-	51	51	-	-
8	Physical Education (1)	1	-	1	34	-	34	-
9	Physical Education (2)	1	-	1	34	-	34	8
10	Family and Population Planning	2	2	-	34	34	-	-
Total		22	20	2	408	340	68	-

Note: Completing these courses is according to the titles of Islamic Education General Courses (the following table), ratified on meeting 542 of the Supreme Council of the Cultural Revolution dated 2004/07/13.

Table 2. Basic Courses

Code	Course Title	Course Credits			Credit Hours			Prerequisite
		Total	Theoretical	Practical	Total	Theoretical	Practical	
1	Mathematics	3	3	-	51	51	-	-
2	Physics	3	2	1	68	34	34	-
3	General Chemistry	3	2	1	68	34	34	-
4	Organic Chemistry	3	2	1	68	34	34	-
5	Physiology	2	2	-	34	34	-	-
6	General Microbiology and Parasitology	3	2	1	68	34	34	-
7	Principals of Computer	1	0.5	0.5	25	8	17	-
8	Analytical Chemistry	3	2	1	68	34	34	3
9	Physical Chemistry	3	2	1	68	34	34	2 and 3
10	General Biochemistry	3	2	1	68	34	34	4
11	Introductory Statistics	2	2	-	34	34	-	1
Total		29	21.5	7.5	620	365	255	-

Table 3. Principal Courses

Code	Course Title	Course Credits			Credit Hours			Prerequisite
		Total	Theoretical	Practical	Total	Theoretical	Practical	
12	Food Chemistry (1)	3	3	-	51	51	-	-
13	Food Chemistry (2)	3	3	-	51	51	-	-
14	Food Microbiology	4	2	2	102	34	68	-
15	Principal of Management	2	2	-	34	34	-	-
16	Hygiene and Safety in Food Industry	2	2	-	34	34	-	-
17	Principal of Nutrition	2	2	-	34	34	-	-
18	Principal of Food Engineering	3	3	-	51	51	-	-
19	Food Analysis Instruments	2	1	1	51	17	34	3
20	Food Poisoning	1	1	-	17	17	-	2 and 3
21	Principal and Methods of Food Preservation	2	2	-	34	34	-	4
22	Research and Investigation Methods	2	2	-	34	34	-	1
Total		26	23	3	493	391	102	-

Table 4. Core Courses

Code	Course Title	Course Credits			Credit Hours			Prerequisite
		Total	Theoretical	Practical	Total	Theoretical	Practical	
23	Specialized English	2	2	-	34	34	-	7
24	Food Analysis	4	2	2	102	34	68	13
25	Food Quality Control (1)	4	2	2	102	34	68	14 and 24
26	Food Quality Control (2)	3	2	1	68	34	34	25
27	Industrial Microbiology	2	2	-	34	34	-	14
28	Cereal Technology	2	2	-	34	34	-	21
29	Meat Technology	2	2	-	34	34	-	21
30	Dairy Technology	2	2	-	34	34	-	13, 14 and 18
31	Oil Technology	2	2	-	34	34	-	12 and 18
32	Fruit, Vegetable and Canning Technology	2	2	-	34	34	-	21
33	Sugar Technology	2	2	-	34	34	-	21
34	Confectionary and Beverage Technology	2	2	-	34	34	-	21
35	Packaging Technology	2	2	-	34	34	-	21
36	Food Processing	1	1	-	17	17	-	21
37	Seminar	1	1	-	17	17	-	22, 23, 28 and 36
Total		28	5	33	476	170	646	-

Table 5. Elective Courses

Code	Course Title	Course Credits			Credit Hours			Prerequisite
		Total	Theoretical	Practical	Total	Theoretical	Practical	
38	Food Planet Design	2	2	-	34	34	-	-
39	Corrosion in the Food Industry	2	2	-	34	34	-	-
40	Principal of Economic and Industrial Management	2	2	-	34	34	-	-
41	Water and Waste Water	2	2	-	34	34	-	-
Total		8	8	-	136	136	-	-

Table 6. Internship Courses

Code of the Course	Name of the Course	Credits	Teaching Hours
42	Internship in the Field of Cereal Technology	2	102
43	Internship in the Field of Meat Technology	2	102
44	Internship in the Field of Dairy Technology	2	102
45	Internship in the Field of Oil Technology	2	102
46	Internship in the Field of Fruit, Vegetable and Canning Technology	2	102
47	Internship in the Field of Sugar Technology	2	102
48	Internship in the Field of Confectionary and Beverage Technology	2	102
49	Internship in the Field of Food Quality Control Centers	2	102
Total		16	816