



# Course Specification

## (Bachelor)

Course Title: Food Microbiology

Course Code: APFQ1104

Program: Intermediate Diploma in Food Quality and Safety

Department: Clinical Nutrition

College: Applied medical sciences

Institution: Umm Al-Qura University

Version: 3

Last Revision Date: 07/10/2024



## Table of Contents

A. General information about the course:.....	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods.....	4
C. Course Content .....	5
D. Students Assessment Activities .....	7
E. Learning Resources and Facilities.....	7
F. Assessment of Course Quality .....	8
G. Specification Approval .....	8



## A. General information about the course:

### 1. Course Identification

1. Credit hours: ( ...3... )

#### 2. Course type

- A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
- B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: ( 1<sup>st</sup> level/1<sup>st</sup> year)

#### 4. Course General Description:

This course introduces the basics of microbiology and is designed for students with no previous microbiology background. It consists of the basic principles of bacteriology, virology, and mycology, with special emphasis on microorganisms implicated in food/water-borne infections and viruses.

#### 5. Pre-requirements for this course (if any):

NA

#### 6. Co-requisites for this course (if any):

NA

#### 7. Course Main Objective(s):

The student should obtain Specific knowledge about food microbiology and microbial assessment of food for quality and safety as well as food viruses.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	4	%100
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>Traditional classroom</li> <li>E-learning</li> </ul>		



No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		60

### B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	List of the Sources of food contamination with microorganisms	K1	Lectures Assignments	Exams Rubrics
1.2	Describe the different methods used to control the bacterial growth in food products	K1		
...				
2.0	Skills			
2.1	Appraise the effect of microorganisms in food and analyze their relationship with each other	S1	Problem solving Internet assignments	Exams Rubrics
2.2	Explain the negative effects of microorganisms in food and how to benefit from the positive effects of	S1		





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	these organisms moreover food viruses			
...				
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Perform effective communication and positive relation with others.	V1	Laboratory practical Assignments	Exams Rubrics
3.2				
...				

## C. Course Content

### Theoretical topics

No	List of Topics	Contact Hours
1.	Over all view of the course contents and Introduction Introduction of food microbiology, aims, objective, exams, definitions, topics covered, how the course fit in our program	2
2.	Characteristics, classification and structure of microorganisms in foods Bacterial Structure, Differences between Prokaryotic and Eukaryotic, Classification of Microorganisms	2
3.	Bacterial nutrition, growth and metabolism	2
4.	Sterilization and disinfection	2
5.	Food sampling sampling plan, Factors affecting choosing the sampling plan, Types of samples and Collection of the samples	2
6.	Midterm Exam	2
7.	Sources of Microorganisms in Foods	2
8.	Intrinsic factors affecting growth and survival of food microorganisms	2
9.	Extrinsic factors affecting growth and survival of food microorganisms	2
10.	Foodborne diseases	2
11.	Bacterial foodborne diseases	2
12.	Viral foodborne diseases	2
13.	Parasitic foodborne diseases	2
14.	Foodborne mycotoxins	2
15.	Intestinal Beneficial Bacteria	2
<b>Total</b>		<b>30</b>



## Practical topics

No	List of practical topics	Contact Hours
1.	Microbiology Lab Safety	2
2.	Microscope	2
3.	Sterilization and disinfection	2
4.	Morphology and Gram Staining	2
5.	Food sampling , Preparation of sample homogenate &Serial dilutions	2
6.	Laboratory and Culture Techniques: Media Preparation; Plating, Isolation, and Enumeration	2
7.	Aerobic Mesophilic Count	2
8.	Enumeration of coliforms in food	2
9.	Faecal contaminations of food - Enumeration and identification of coliform bacteria and Escherichia coli in a salad sample	2
10.	Microbiology of Cereal and Cereal products - Wheat and Flour ( Bacillus cereus & Clostridium perfringens)	2
11.	Microbiology of Fish and seas foods (Escherichia coli & Vibrio spp)	2
12.	Microbiology of Fruits and Vegetables (Yeast and Mould )	2
13.	Microbiology of Milk and Dairy Products (Salmonella spp & Staphylococcus aureus )	2
14.	Microbiology of Drinking Water (Fecal coliforms- Pseudomonas aeruginosa)	2
15.	Lab Review and Discussion	2
Total		30



## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam	6 <sup>th</sup>	25%
2.	Assignment, group project, report	All weeks	15%
3.	Practical assessment	All weeks	20%
4.	Final Written exam	18 <sup>th</sup>	40%

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

Essential References	<ul style="list-style-type: none"> <li>Adams, M. R., McClure, P., &amp; Moss, M. O. (2024). <i>Food microbiology</i> (5th ed.).</li> <li>Ray, B., &amp; Bhunia, A. (2013). <i>Fundamental food microbiology</i>. CRC Press.</li> <li>Banwart, G. (2012). <i>Basic food microbiology</i>. Springer Science &amp; Business Media.</li> <li>Frazier, W. C., Westhoff, D. C., &amp; Vanitha, N. M. (2017). <i>Food microbiology</i> (5th ed.). McGraw Hill Education.</li> </ul>
Supportive References	<ul style="list-style-type: none"> <li>J. of food science</li> <li>J. of milk and food technology.</li> <li>J. of Food Protection</li> <li>J. Food Microbiology</li> <li>J. of Dairy Science</li> </ul>
Electronic Materials	<p><a href="https://microbeonline.com/types-of-bacteriological-culture-medium">https://microbeonline.com/types-of-bacteriological-culture-medium</a></p> <p><a href="https://microbiologyonline.org/">https://microbiologyonline.org/</a></p> <p><a href="https://www.frontiersin.org/journals/microbiology/sections/food-microbiology">https://www.frontiersin.org/journals/microbiology/sections/food-microbiology</a></p>
Other Learning Materials	

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<b>Classrooms: 100</b> <b>Laboratories: 3 laboratories</b>
<b>Technology equipment</b> (projector, smart board, software)	<b>Computing unites, monitors and wireless internet connection</b>
<b>Other equipment</b> (depending on the nature of the specialty)	

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	students	- Course questionnaire evaluation - Program questionnaire evaluation - Student experience questionnaire evaluation
Effectiveness of Students assessment	students Faculty	Questionnaires of faculty, students and staff
Quality of learning resources	students Faculty	Questionnaires of faculty, students and staff
The extent to which CLOs have been achieved	students	- Course questionnaire evaluation - Program questionnaire evaluation - Student experience questionnaire evaluation
Other		

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	Umm Al-Qura University Council
<b>REFERENCE NO.</b>	851141114462/190392
<b>DATE</b>	22/11/1446