



## Course Specifications

<b>Course Title:</b>	<b>Food Microbiology</b>
<b>Course Code:</b>	<b>2062204-3</b>
<b>Program:</b>	<b>Bachelor in Food Science and Nutrition</b>
<b>Department:</b>	<b>Food Sciences and Nutrition Department</b>
<b>College:</b>	<b>College of Science</b>
<b>Institution:</b>	<b>Taif University</b>

## Table of Contents

<b>A. Course Identification</b> .....	<b>3</b>
6. Mode of Instruction (mark all that apply) .....	3
<b>B. Course Objectives and Learning Outcomes</b> .....	<b>3</b>
1. Course Description .....	3
2. Course Main Objective.....	3
3. Course Learning Outcomes .....	4
<b>C. Course Content</b> .....	<b>4</b>
<b>D. Teaching and Assessment</b> .....	<b>5</b>
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods .....	5
2. Assessment Tasks for Students .....	5
<b>E. Student Academic Counseling and Support</b> .....	<b>6</b>
<b>F. Learning Resources and Facilities</b> .....	<b>6</b>
1. Learning Resources .....	6
2. Facilities Required.....	6
<b>G. Course Quality Evaluation</b> .....	<b>7</b>
<b>H. Specification Approval Data</b> .....	<b>7</b>

## A. Course Identification:

<b>1. Credit hours:</b> 3 Hours
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 5 <sup>th</sup> Level / 2 <sup>nd</sup> year
<b>4. Pre-requisites for this course (if any):</b> Microbiology (2062141-3)
<b>5. Co-requisites for this course (if any):</b> None

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	6 hr/Week	100%
2	Blended	---	---
3	E-learning	---	---
4	Distance learning	---	---
5	Other	---	---

### 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	20
3	Tutorial	---
4	Others (specify)	---
	<b>Total</b>	<b>50</b>

## B. Course Objectives and Learning Outcomes:

<p><b>1. Course Description</b></p> <p>This course deals with studying the nature of microorganisms (bacteria, yeasts, and molds) found in foods- Effects of industrial processing on the microbial load of foods- classification of microorganisms in foods according to their effects: useful for food processing, causing food spoilage, or pathogenic)- Principles and types of food spoilage- Microbial food poisoning- Microbiology of different food products (Vegetables, fruits and cereals- sugar, Molasses, and Honey and candy- milk and dairy products- Meat and meat products- fish and fish products- poultry and eggs- frozen foods and canned foods).</p>
<p><b>2. Course Main Objective:</b></p> <p>1) Providing scientific knowledge about initial microbial load and sources of microbial contamination of food; factors influencing the growth of microorganisms in food; food spoilage and food-borne diseases; the methods that control the microbial activity in food; and beneficial applications of the uses of microorganisms in food.</p> <p>2) Follow up the recent advances in the field of food microbiology including microbiological standards, rapid methods of detecting microorganisms in foods. This can be achieved by continuously visit the official web-sites of the national and international organizations interested in foods.</p>

### 3. Course Learning Outcomes:

CLOs		Aligned PLOs
1.0	<b>Knowledge and Understanding</b>	
1.1	Describe beneficial uses of microorganisms in foods.	<b>K 3</b>
1.2	List the sources of food contamination by microorganisms and the important microbial food spoilage and food-borne diseases.	<b>K 3</b>
1.3	Summarizes important factors affecting the activity of microorganisms in foods.	<b>K 4</b>

CLOs		Aligned PLOs
<b>2.0</b>	<b>Skills :</b>	
2.1	Demonstrate the role of microorganisms in food safety and the different between the microbial and non-microbial spoilage of food.	<b>S 3</b>
2.2	Evaluate the microbiological quality of various types of food.	<b>S 3</b>
2.3	Interpret the results of microbial analysis in the form of scientific reports.	<b>S 3</b>
2.4	Apply the specific criteria of food samples handling in microbiological laboratory.	<b>S 3</b>
<b>3</b>	<b>Values:</b>	
3.1	Cooperate to analyze the problems appear in food sampling process.	<b>V 1</b>
3.2	Participate in writing the scientific reports related to food microbiology.	<b>V 1</b>
3.3	Contribute to prepare the research in recent advances in the field of food quality and microbiological specifications.	<b>V 1</b>

### C. Course Content:

No	List of Topics	Contact Hours
1	Introduction to basics of food microbiology- Nutrients in food.	3
2	Important microbial groups in foods.	3
3	Factors affecting microbial growth in foods (Intrinsic, Extrinsic and implicate factors).	3
4	Microbial contamination of foods.	6
5	Microbial spoilage of different food staff (Vegetables, fruits and cereals- sugar, Molasses, Honey and candy- milk and dairy products- Meat and meat products- fish and fish products- poultry and eggs- frozen foods and canned foods).	6
6	Food-borne pathogens - Food poisoning (infection and intoxication).	6
7	Control of microbial growth in foods (Food preservation).	3
<b>Total</b>		<b>30</b>
<b>Practical Topics</b>		
1	Guidelines for working in food microbiology laboratory - Laboratory safety precautions - Practical guidelines.	2
2	Use selective media to Isolation, description and purification of contaminant microbes in food.	2
3	Study the influence of (Intrinsic and Extrinsic factors) on microbial growth in foods	2
4	Microorganism's Count Techniques (Different Colony Count Techniques of Food)	2
5	Microbiological analyzes of juices, concentrates, cereals, meat products, meat, poultry, fish, eggs and canned foods	6
6	Methods of detection of some pathogens in food samples.	2
7	Methods of estimating microbiological quality in food production establishments.	2
8	Methods for estimating the count of Lactic Acid Bacteria.	2
<b>Total</b>		<b>20</b>

### D. Teaching and Assessment

#### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and Understanding:</b>		
1.1	Describe beneficial uses of microorganisms in foods.	- Lecture	- Written exam
1.2	List the sources of food contamination by microorganisms and the important microbial food spoilage and food-borne diseases.	- Lecture	- Written exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	Summarizes important factors affecting the activity of microorganisms in foods.	- Lecture	- Written exam
<b>2.0</b>	<b>Skills</b>		
2.1	Demonstrate the role of microorganisms in food safety and the different between the microbial and non-microbial spoilage of food.	- Lecture and discussion - Practical lessons	- Written and Practical exams
2.2	Evaluate the microbiological quality of various types of food.	- Practical lessons	- Practical exam
2.3	Interpret the results of microbial analysis in the form of scientific reports.	- Problem-solving exercises	- Practical exam
2.4	Apply the specific criteria of food samples handling in microbiological laboratory	- Practical lessons	- Practical exam
<b>3.0</b>	<b>Values</b>		
3.1	Help to analyze the problems appear in food sampling process.	- Practical lessons - Problem-solving exercises	- Practical exam - - Report evaluation
3.2	Participate in writing the scientific reports related to food microbiology.	- Work in small groups	- Report evaluation
3.3	Contribute to prepare the research in recent advances in the field of food quality and microbiological specifications.	- Work in small groups, self-learning	- Report evaluation

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignment and Interaction during lectures	Continues	10%
2	Midterm exam	5-6	20%
3	Weekly Lab. Reports	Continues	20%
4	Practical exam	11	10%
5	Final exam	12	40%

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

## E. Student Academic Counseling and Support:

### Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

- There are 6 h per week for this purpose and the students know these hours according to the time of professor who teach the course.
- Communicate 24 hours in 7 days via social media, chat, email and blackboard.
- Student satisfaction surveys are conducted for academic guidance.
- Develop an improvement plan for academic guidance based on the results of the questionnaire analysis.

## F. Learning Resources and Facilities

### 1. Learning Resources:

<b>Required Textbooks</b>	<ul style="list-style-type: none"> <li>- Matthews, K. R.; Kniel, K. E. and Montville, T. J. (2017). Food Microbiology: An Introduction, 4<sup>th</sup> Edition. ASM Press, Washington, DC 20036-2904, USA. March 2017, ISBN: 978-1-555-81938-5, 624 Pages</li> <li>- James, J. M.; Loessner, M. J. and Golden, D. A. (2005). Modern Food Microbiology. 7th Edition. Springer, USA. ISBN: 978-0-387-23413-7.</li> <li>- Wessner D.; C. Dupont; T. Charles and J. Neufeld (2016). Microbiology, 2nd Edition. Wiley-Blackwell, September 2016, ISBN: 978-1-119-32066-1, 960 Pages.</li> </ul>
<b>Essential References Materials</b>	<ul style="list-style-type: none"> <li>- أحمد محمود عليان. ميكروبيولوجيا الأغذية التطبيقية. الدار العربية للنشر والتوزيع (٢٠٠٩).</li> <li>- Journal of Food Microbiology.</li> </ul>

<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>- Wikipedia</li> <li>- Sciencedirect.com</li> <li>- Springer</li> <li>- Wiley</li> <li>- PubMed.</li> <li>- <a href="http://www.aoac.org/">http://www.aoac.org/</a></li> <li>- <a href="http://www.foodprotection.org/about-us/news-releases/64/international-association-for-food-protection- holds-2010-2011-secretary-election/">http://www.foodprotection.org/about-us/news-releases/64/international-association-for-food-protection- holds-2010-2011-secretary-election/</a></li> <li>- <a href="http://icfmh.org/">http://icfmh.org/</a></li> <li>- <a href="https://www.iso.org/home.html">https://www.iso.org/home.html</a></li> <li>- <a href="http://www.who.int/en/">http://www.who.int/en/</a></li> </ul>
<b>Other Learning Materials</b>	- None

## 2. Facilities Required:

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> <li>- Classroom (capacity not more than 40 students) for 3 h/week.</li> <li>- Microbial Lab (capacity not more than 20 students) for 3 h/week</li> </ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> <li>- Data Show projectors, smart blackboard.</li> <li>- Computer Portable PowerPoint presentations to special lectures.</li> </ul>
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> <li>- Data Show projectors, smart blackboard.</li> <li>- Computer Portable PowerPoint presentations to special lectures.</li> <li>- Autoclave, Incubators, Micropipettes and its tips, Petri dishes, Disinfectants, Culture media and Samples of different foods.</li> </ul>

## G. Course Quality Evaluation:

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students, faculty, program leaders and Peer Reviewer	<ul style="list-style-type: none"> <li>• Continuous monitoring by directors of program and quality assurance unit (Direct).</li> <li>• Applying questionnaires received from the Deanship of Academic Development for Student evaluation (indirect).</li> <li>• Evaluation of course report (indirect).</li> </ul>
Extent of achievement of course learning outcomes	Students, faculty, program leaders and Peer Reviewer	<ul style="list-style-type: none"> <li>• Applying Questionnaires for Student evaluation (indirect).</li> <li>• Evaluation of course report (indirect).</li> </ul>
Quality of learning resources	Faculty, program leaders, administrative staff, independent reviewers.	<ul style="list-style-type: none"> <li>• Continuous monitoring by directors of program and quality assurance unit (Direct).</li> <li>• Applying Questionnaires for Student evaluation (indirect).</li> <li>• Evaluation of course report (indirect).</li> </ul>

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

Council / Committee	Department council - Academic Development Committee	
Reference No.	Department council NO: 5	Subject NO: 2
Date	08 /07 /1444 H	

