



Course Specifications

Revised November 2019

Course Title:	Food Microbiology
Course Code:	4014492-3
Program:	Microbiology
Department:	BSc Microbiology
College:	Faculty of Applied Science – Department of Biology
Institution:	UM AL – QURA UNIVERSITY
Revision Date	November 2019

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A. Course Identification

1. Credit hours: 3 hours
2. Course type
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"/>
Level/year at which this course is offered: 4 th Year / Level 6
4. Pre-requisites for this course (if any): Bacteriology (4012422-3) / Microbial physiology (4012452-3)
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50 %
2	Blended		-
3	E-learning		-
4	Correspondence		-
5	Other	30	50 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	42
3	Tutorial	-
4	Practical/Field work/Internship	6
5	Others (specify)	30
	Total	102
Other Learning Hours*		
1	Study	30
2	Assignments	8
3	Library	15
4	Projects/Research Essays/Theses	10
5	Others (specify)	-
	Total	63

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This is a compulsory course. Students will be exposed to problems of microorganisms in food processing, preservation and storage. The course will highlight basically various method of manipulating and control of food microorganisms. This will include the advantages of microorganisms in Food processing and product development. Furthermore, concepts of food spoilage, food poisoning and microbial hazard will be treated. The course will expose students to practical lessons that are relevant to the basic concepts of the implication of microorganisms in food processing, preservation and storage.

2. Course Main Objective

Upon successful completion of this course, the student should:

- Obtain a basic understanding of the microbial phenomena occurring in food products.
- Will become familiar with the laboratory methods used in the microbiological analysis of foods, and with the identifying characteristics of the major groups of microorganisms associated with food spoilage, foodborne disease, and food fermentations.
- Isolate and Identify different types of microorganisms and describe the advantages and disadvantages of microorganisms as they affect food and food products
- Have a knowledge about the method for food preservations
- Explain the various activities of microorganisms as they relate to food spoilage and food poisoning, food processing and preservation.
- Explain methods of control and eradication of food poisoning
- Manipulate and control microorganisms in product development.
- The students are practically trained in microbiological analysis by performing analysis on several food products for different microbial parameters. By means of the practical work, an insight is created in the factors influencing the microbial ecology of food products.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<p>Knowledge:</p> <ul style="list-style-type: none"> ❖ Upon successful completion of this course the student will be: <ul style="list-style-type: none"> • Aware with the basic information of food microbiology. • understand the positive and negative roles of microorganisms in food and dairy products • Familiar with the laboratory methods used in the microbiological analysis of foods, and with the identifying characteristics of the major groups of microorganisms associated with food spoilage, foodborne disease, and food fermentations. • Have a knowledge about the method for food preservations • Could enumerate types of the microbial food poisoning • Will be familiar with the role of microorganisms in food spoilage. • List the groups of organisms are associated with bread, fruits and dried foods spoilage. 	
2	<p>Skills:</p>	

CLOs		Aligned PLOs
2.1	<p>Cognitive skills to be developed</p> <p>Having successfully completed the course students should be able to:</p> <ul style="list-style-type: none"> • Thinking and give information about the taxonomy of microorganisms that play an important roles in food and dairy • Give information about the role of microorganisms in food and dairy products. • Explain the why the fresh and vegetable foods will rapidly spoilage than the dried food? • List the common changes observed with spoilage of fruits and vegetables • Give reasons for spoilage of fish and meet. • Discuss the problem of Food Poisoning • List the common chemicals that can cause Food poisoning and how can these be prevented? • Discuss the risks of synthetic food preservatives • Compare between the natural and synthetic food preservatives • Discuss the common food items associated with biological Food poisoning • Describe the common symptoms of food poisoning generally • List the types of microorganisms associated with milk contamination. 	
2.2.	<p>Psychomotor Skills</p> <p>Upon successful completion of this course, the student is expected to be able to:</p> <ul style="list-style-type: none"> • Perform the laboratory experiments precisely • Operate all devices in lab • Prepare the different media used to investigate the collected food samples. • Analyze the food samples for the presence of pathogen microorganisms 	
3	Competence:	
3.1	<p>Upon successful completion of this course, the student is expected to be able to</p> <ul style="list-style-type: none"> • Developing oral presentations. • Communicating personal ideas and thoughts. • Work independently and as part of a team to finish some assignments. • Communicate results of work to others. • Use of needed precautions when dealing with microbes in sewage water • Demonstrate professional attitudes and behaviors towards others. • Demonstrate his capability for the responsibility and accountability • Show Effective verbal communication with clarity. • Propose the smart questions. • Understand and dissecting the problem so that it is fully solved 	

CLOs		Aligned PLOs
	<p>understood.</p> <ul style="list-style-type: none"> • Demonstrate the assertiveness for his decision. • Show Effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, non-verbal communication, good listening for the others, questioning, good manners, problem solving, social awareness, self-management, responsibility and accountability). • Enhancing the ability of students to use computers and internet. • Interpret the laboratory data. • Know how to write a report. 	

C. Course Content

1 Topics to be Covered		
Topic	No of Weeks	Contact hours
<ul style="list-style-type: none"> ❖ Introduction and history of food microbiology ❖ Positive and negative roles of the microorganisms in food and dairy products 	1	2
<ul style="list-style-type: none"> ❖ Food and dairy microorganisms 	1	2
<ul style="list-style-type: none"> ❖ Microbial contamination of raw material, Contamination of various foods ,Sources of contamination 	1	2
<ul style="list-style-type: none"> ❖ Food spoilage: <ul style="list-style-type: none"> - the factors responsible for food spoilage - spoilage of some specific foods (Milk products, cereals, canned foods, vegetables. - Factors affecting growth of Microorganism (the factors that affect the growth of microorganisms and how they can becontrolled. 	3	6
<ul style="list-style-type: none"> ❖ Principles and the methods for food preservation: ❖ Methods of Food Processing, Preservation and Storage (To describe the various methods of processing and preservation techniques used in enhancing the quality and storability of foods) 	4	8

<ul style="list-style-type: none"> ❖ Food poisoning: <ul style="list-style-type: none"> - Types of food poisoning, - Bacterial food poisoning. - Indicator microorganisms for food quality and safety - Foods with Greatest Risk (foods with greatest risk to food poisoning and reasons for their susceptibility) - Diseases caused from contaminated foods 	2	4
<ul style="list-style-type: none"> ❖ New technology for developing the Food Products: by using natural microbial products such as Nisin, Bacteriocin-like substances, using single cell protein from microorganisms. 	2	4
	14 weeks	28hrs

D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	<p>Upon successful completion of this course The student</p> <ul style="list-style-type: none"> • Aware with the basic information of food microbiology. • understand the positive and negative roles of microorganisms in food and dairy products • Familiar with the laboratory methods used in the microbiological analysis of foods, and with the identifying characteristics of the major groups of microorganisms associated with food spoilage, foodborne disease, and food fermentations. • Have a knowledge about the method for food preservations • Could enumerate types of the microbial food poisoning • Will be familiar with the role of microorganisms in food spoilage. • List the groups of organisms are associated with bread, fruits and dried foods spoilage, 	<ul style="list-style-type: none"> • The methodology includes a combination of lectures by the lecturer, seminar presentation by the students and web-interactions. Students will be given opportunity to investigate different food products in the laboratory. • At the end of the programme, students will be divided into groups for seminar presentation on important areas of the course to assess their understanding and comprehension of the course. • All students will be involved in on-line learning process and each student is required to create 	<ul style="list-style-type: none"> • Periodical exam and reports 10% • Mid- term theoretical exam 20% • Mid-term practical exam 5% • Final practical exam 15% • Final exam 50%

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		<p>an E-mail address to facilitate student web interactions.</p> <ul style="list-style-type: none"> • Using images and movies • Studying food microorganisms specimens in lab. • Encouraging student to collect the new information about different important microorganisms in food. • Enable the reference books and scientific sites concerning food microorganisms in internet. 	
2.0 Skills			
2.1	<p>Cognitive skills</p> <p>Having successfully completed the course students should be able to:</p> <ul style="list-style-type: none"> • Think and give information about the taxonomy of microorganisms that play an important roles in food and dairy • Give information about the role of microorganisms in food and dairy products. • Explain the why the fresh and vegetable foods will rapidly spoilage than the dried food? • List the common changes observed with spoilage of fruits and vegetables • Give reasons for spoilage of fish and meet. • Discuss the problem of Food Poisoning • List the common chemicals that can cause Food poisoning and how can these be prevented? • Discuss the risks of synthetic food preservatives 	<p>- Lectures</p> <p>-Brain storming</p> <p>-Discussion</p>	<p>- Exam must contain questions that can measure these skills.</p> <p>- Quiz and exams</p> <p>- Discussions after the lecture.</p>

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	<ul style="list-style-type: none"> • Compare between the natural and synthetic food preservatives • Discuss the common food items associated with biological Food poisoning • Describe the common symptoms of food poisoning generally • List the types of microorganisms associated with milk contamination. 		
2.2	<p>Psychomotor Skills Upon successful completion of this course, the student is expected to be able to:</p> <ul style="list-style-type: none"> • Perform the laboratory experiments precisely • Operate all devices in lab • Prepare the different media used to investigate the collected food samples. • Analyze the food samples for the presence of pathogen microorganisms. 	<ul style="list-style-type: none"> - Follow up students the students in lab and during carryout all the laboratory experiments 	<ul style="list-style-type: none"> -Giving additional marks for the students they have accurate laboratory results and good seminar presentation -Practical exam.
3.0	Competence		
	<ul style="list-style-type: none"> • Developing oral presentations. • Communicating personal ideas and thoughts. • Work independently and as part of a team to finish some assignments. • Communicate results of work to others. • use of needed precautions when dealing with detection of pathogenic microorganisms in some foods. • Demonstrate professional attitudes and behaviors towards others. • demonstrate his capability for the responsibility and accountability • Show Effective verbal communication with clarity. • Propose the smart questions. • Understand and dissecting the problem so that it is fully solved understood. • Demonstrate the assertiveness for his decision. • show Effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, non-verbal 	<ul style="list-style-type: none"> • Lab work • Case Study • Active learning • Small group discussion • Homework (preparing a report on some topics related to the course depending on web sites). • Seminars presentation • Practical during the carryout the experiments in the lab. 	<ul style="list-style-type: none"> • Oral exams. • Evaluate the efforts of each student in preparing the report. • Evaluate the scientific values of reports. • Evaluate the work in team • Evaluation of the role of each student in lab group assignment • Evaluation of students presentations

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	<p>communication, good listening for the others, questioning, good manners, problem solving, social awareness, self-management, responsibility and accountability).</p> <ul style="list-style-type: none"> Enhancing the ability of students to use computers and internet. Interpret the laboratory data. Know how to write a report. 		

2. Assessment Tasks for Students

5. Schedule of Assessment Tasks for Students During the Semester

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11	--	5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
Total Marks				100%

*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 :

Office hours: 10hrs.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> Course note and PPT prepared by faculty member responsible for the course: Associate Prof. Dr. Khaled Elbanna
Essential References Materials	<ul style="list-style-type: none"> James M. Jay (2000). Modern Food Microbiology (6th ed.) (Aspen food science text series) Includes bibliographical references and index. ISBN 0-8342-1671-X. AN ASPEN PUBLICATION® Aspen Publishers, Inc. Gaithersburg, Maryland Adegoke, G.O. (2004). Understanding Food Microbiology. 2nd edition. Ventures.

Electronic Materials	<ul style="list-style-type: none"> • PPT prepared by Associate prof. Dr. Khaled Elbanna
Other Learning Materials	<p>Ayres, J.C., Mundt, J.O. and Sandine, W. E. (1980).Microbiology of Foods. W.H. Freeman & Company, San Francisco.ISBNO-7167-1049-8.Pg 44-69.</p> <hr/> <p>Nester,E.W, Andreson, D.F, Roberts, Jr, C.E, Pearsall, N.N. and Nester, M.T. (2004). Microbiology, A human Perspective.4th edition.McGraw Hill Company, New York. Pp 245-341. ISBN 0-072473827.</p> <hr/> <p>Betty, C.H. (1974). Food poisoning & food Hygiene 3rd edition. William Clowes& Son Ltd, London. Pp 3-12. ISBN 0-7131-42170.</p> <hr/> <p>Fox, B.A and Cameron, A.G. (1992).Food Science, Nutrition and Health.5th edition. Edward Arnold, London pp 330-312. ISBN 0-340-49675-4.</p> <hr/> <p>Gaman, P.M & Sherrington, (1996).The science of food.3rd edition. Read Education and Professional Publishing Ltd. pp 177-84. ISBN 0-7506-2957-6.</p> <hr/> <p>Ihekoronye, I.A. and Ngoddy, P.O (1985). Integrated Food Science and Technology for the Tropics. Macmillan Publisher, London. Pp 106-108. ISBN- 0-333-38883-6</p> <hr/> <p>Arcbukle W.S. (1986). Ice Cream.A publishing Company U.K 5th edition. Gaffa, T.; Jideani I.A and Nkama, I. (2002).Traditonal Production, Consumption and Storage of kunu-anon-alcoholic cereal beverage. Plant Food Human Nutrition 57:73-81</p>

2. Facilities Required

Item	Resources
<p>Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p>	<ul style="list-style-type: none"> • Class room is already provided with data show • The area of class room is suitable concerning the number of enrolled students (68) and air conditioned
<p>Technology Resources (AV, data show, Smart Board, software, etc.)</p>	<ul style="list-style-type: none"> • Digital lab containing 15 computers.
<p>Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)</p>	<ul style="list-style-type: none"> • Incubators, autoclaves, measuring equipment, water bath, digital balances, pH meters, safety facilities. • Availability of some reference bacterial strains • Different media used in food microbiology • All chemicals and reagents needed.

G. Course Quality Evaluation

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching <ul style="list-style-type: none"> • Questionaries • Open discussion in the class room at the end of the lectures.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department <ul style="list-style-type: none"> • Revision of student answer paper by another staff member. • Analysis the grades of students.
3. Processes for Improvement of Teaching <ul style="list-style-type: none"> • Preparing the course as PPT. • Using scientific movies. • Coupling the theoretical part with laboratory part • Periodical revision of course content.
4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) <ul style="list-style-type: none"> • After the agreement of Department and Faculty administrations
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. <ul style="list-style-type: none"> • Periodical revision by Quality Assurance Units in the Department and institution

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

Prepared by faculty staff: Prof. Dr. Khaled Elbanna	Signature:
Date Report Completed: November 2019	
Revised by: 1. Dr. Khaled Elbanna 2. Dr. Hussein H. Abulreesh 3. Dr. Shady Elshahawy	Signature:
Date: 1.10.2019	
Program Chair Dr. Hussein H. Abulreesh	Signature:
Dean	Signature:
Date:	