



Department of Biology
College of Science
University of Salahaddin
Subject: Food Microbiology
Course Book: Fourth Class
Academic year: 2023-2024

Course book

Course Title		Food microbiology
Code	Theory Hr./week	Practical Hr./week
SBIO	2	2

Course type	Compulsory
Department/College	Biology/Science
Course language	English

Course lecturer(s)	<p>Dr. Abdulilah Saleh Ismaeil</p> <p>Nishtiman S. Hasan</p>
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Teacher's academic Profile	<p>Abdulilah Saleh Ismaeil</p> <p>I graduated in 1998 from Salahaddin University - college of science, biology department, ranked third among biology department. I got master science (Food microbiology) in 2005 at college of science-salahaddin university.</p> <p>I got PhD in Food Microbiology at college of science-salahaddin university in 2020.</p> <p>Nishtiman S. Hasan</p> <p>I graduated from Salahaddin University Biology department in 2012, worked as assistant biology for four years and assist in many labs. In 2019 I finished my MSc degree and started as Assistant Lecturer Teaching in 2021. I have become member in Biological syndicate in 2013.</p>
Course Objectives	<ul style="list-style-type: none"> • The course introduces the basic concepts of food microbiology. Food Microbiology include an overview of groups of microorganisms important in food (bacteria, moulds, yeasts) with factors effecting on their growth in food. Also the course includes the sources of food contamination with microorganisms,

	<p>spoilage of food products by microorganisms, methods of food preservation. Also includes the important food pathogens (food borne disease) and methods of isolation, prevention and controlling them.</p> <ul style="list-style-type: none"> • The course includes the microbiological quality and safety of foods
<p>Intended Learning Outcomes</p>	<ol style="list-style-type: none"> 1. learn and understand the interrelationship of microorganisms with Foods and their role in food spoilage & food poisoning. 2. Learn & understand the different methods of food preservations. 3. Predict the impact of food production and food handling. 4. Discuss the detection and enumeration of microorganisms in foods Including the spoilage & food poisoning microorganisms. 5. Identify the indicator microorganisms and microbiological criteria. 6. Identify the important pathogens and spoilage microorganisms in foods and understand the role of environmental factors (i.e. aw, pH , temperature, oxidation-reduction potential) on the growth and <ul style="list-style-type: none"> ➤ Response of microorganisms.
<p>Forms of teaching</p>	<p>The lectures will be given to the student before lecture time, during the lecture time the subjects will be explained using data show and White board together.</p>

Examinations and Grading	<p>-Theoretical exam = 65% practical exam = 35%</p> <p>-Theoretical exam = 15% for the semester exam and 50% for the final</p> <p>Practical exam 35%. for the semester exam</p> <p>Examinations: 20%</p> <p>Assignments: 15%</p>
Course Reading List and References:	<p>1- Garbutt, John, 2000. Essentials of food microbiology. Arnold(London, Sydney, Auckland).</p> <p>2- Adams, M.R. and Moss M.,O. 2008. Food Microbiology, 3 rd Ed. RSC publishing.</p> <p>3- Jay, J. M., M. J. Loessner, and D. A. Golden. 2005. Modern food microbiology, 7th ed.Springer, New York, NY.</p> <p>4- Ray, B., Buhnia, Arun. 2008. Fundamental food microbiology, 4rd Ed. CRC Press, Boca Ratan, FL.</p>

Weekly Subjects

First week

An Introduction of the groups of microorganisms important in food with the Sources of food contamination and methods of controlling them.

Second week

factors effecting on growth of microorganisms in food.

Third week

General basis of food preservation.

Ministry of Higher Education and Scientific research

Food preservation by Low Temperature (cooling, freezing) and their effects on microorganisms.

Fourth week

Food preservation by using High temperature (Pasteurization, sterilization) and their effects on microorganisms.

Fifth week

Microbial food spoilage & the factors affect food spoilage by microorganisms.

Sixth week

Microbial spoilage of milk and milk products.

Seventh week

First exam.

Eighth week

Microbial spoilage of meat, poultry and fish.

Ninth week

Fermentation.

Tenth week

Food borne pathogens.

Eleventh week

Staphylococcal food poisoning.

Twelfth week

Bacillus cereus food poisoning.

Thirteenth week

Listeria food poisoning.

Fourteenth week

Compylobacter food poisoning.

PRACTICAL WEEKLY SUBJECTS

Weeks	Subjects
1	-Course Book -An introduction of food microbiology
2	Methods for microbial examination of food 1- Direct microscopic count (DMC).
3	Total colony count a. pour plate method b. spread plate count
4	Most probable number (MPN)
5	Dye reduction test (Raw milk test).
6	Laboratory pasteurization count method (LPC).
7	Food preservation by high temperature
8	Food preservation by preservative.
9	Meat and meat product spoilage
10	1 st exam.
11	Cereal and cereal product spoilage
12	Spoilage of vegetables and fruits.

13	Isolation of <i>Staphylococcus aureus</i> from food samples.
14	Isolation of <i>Bacillus cereus</i> from food samples.
15	Isolation of <i>E. coli</i> from food samples.
16	Isolation of <i>Clostridium perfringens</i> from food samples
17	2 nd Practical Exam.