



The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

1	Course title	Applied microbiology
2	Course number	0304441
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	2+3
4	Prerequisites/corequisites	General Microbiology 0304341
5	Program title	BSc Biological sciences
6	Program code	0304
7	Awarding institution	University of Jordan
8	Faculty	Science
9	Department	Biological Sciences
10	Level of course	4 th Year
11	Year of study and semester (s)	2016, 1 st semester
12	Final Qualification	BSc
13	Other department (s) involved in teaching the course	Medical Analysis
14	Language of Instruction	English
15	Date of production/revision	First semester 2016

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Prof. Hala Khyami

Office 301

Sunday, Tuesday 12-1, Monday, Wednesday 2-3

horani-h@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

18. Course Description:

As stated in the approved study plan.

This course is directed to students of biology and medical analysis. The major objective of the course is to relate the interaction of microorganisms and food in food bioprocessing, food spoilage, and food borne diseases; it explores food as a substrate for microorganisms, factors affecting growth in food, microorganisms important in food, principles of food preservation, food borne diseases and toxins. The course also investigates some aspects in industrial microbiology: Primary and secondary metabolites, downstream processing, strain development, microorganisms as food, microbial transformation, water pollution and sewage treatment, microbial treatment and utilization of waste.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction, Foods as a substrate for microorganisms.	1				
Factors affecting microbial growth in foods: pH, moisture, oxidation-reduction potential, nutrient content, antimicrobial constituents & biological structure.	1,2				
Microorganisms important in food microbiology: Molds: General characteristics, molds of industrial importance. Bacteria: Characteristics, importance in food microbiology.	3				
Principles of food preservation: Asepsis, anaerobiosis, filtration, chemicals, radiation, low and high temperature.	4,5				
Food borne diseases: Gastroenteritis caused by microorganism, mycotoxins.	6,7				
Screening for new metabolites: Primary and secondary metabolites.	8				
Strain development: Mutation, selection of mutants	9				
Foods and enzymes produced by microorganisms: Microorganisms as foods, Production of amino acids, organic acids, enzymes	10-11				
Microbial transformation	12				
Bioaugmentation, biosensors, bioremediation, biopolymers, biopesticides, bioconversion, biodeterioration, antitumors	13-14				



21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

Lectures, Overhead projector, Power Point presentations, videos: to understand key concepts of food microbiology and practical applications, and how to apply theory to practice, Personal reading (prescribed sections of textbooks): to reinforce/strengthen students' understanding of principles and applications, student presentations and discussions

Laboratory practicals: to become skilled in a range of microbiological techniques.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Midterm exam, student presentations, lab reports, home works, student participation

23. Course Policies:

A- Attendance policies:

Students are allowed to be absent in 10% of the lectures and practicals.

B- Absences from exams and handing in assignments on time:

Make up exams if excuses are accepted (valid reasons according to university regulations), during 1-2 weeks of set exam dates for midterm exams

Make up for final according the university regulations

C- Health and safety procedures:

Complies with university regulations

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Complies with university regulations

E- Grading policy: Midterm theory exam (22%), home works and presentations (8%), Final theory exam (35%), Midterm lab exam (10%), Lab reports & evaluation (10%), Final lab exam (15%)

F- Available university services that support achievement in the course: Data show, internet access

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24. Required equipment:

Analytical balance Phase contrast microscopes pH meter Blender mixer

25. References:

A- Required book (s), assigned reading and audio-visuals: 1. Modern Food Microbiology, by Jay, J.M.; Loessner, M.; and Golden, D.A. 7 th ed., Springer, (2005). 2. Food Microbiology by Martin R. Adams and Maurice O. Moss. 3 rd edition. The Royal Society of Chemistry. 2008. 3. Fundamental Food Microbiology by Bibek Ray. 3 rd edition. CRC press. 2004. 4. Practical Food Microbiology. Edited by Diane Roberts, Melody Greenwood. 3 rd edition. Blackwell Publishing Ltd 5. Introduction to the Microbiology of Food Processing. USDA, food safety and inspection service. 2012. 6. Brock: Biology of Microorganisms, 14th edition. Pearson Education Inc. 2015. Review papers and original research papers as specified in the course curriculum. Manual of practical exercises. 7. Industrial microbiology 8. Lab manual
B- Recommended books, materials, and media:

26. Additional information:

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Name of Course Coordinator: الاستاذة الدكتورة هالة الخيمي Signature: ----- Date: 12/ 01/ 2016

Head of curriculum committee/Department: الاستاذة الدكتورة سوسن العوران Signature: -----

Head of Department: الدكتورة هناء العبوس Signature: -----

Head of curriculum committee/Faculty: الاستاذة الدكتورة أمل العابودي Signature: -----

Dean: الاستاذ الدكتور صالح محمود Signature: -----

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Head of Department
Assistant Dean for Quality Assurance
Course File