

Course Syllabus

1	Course title	Food Mycology
2	Course number	0643720
3	Credit hours (theory, practical)	3 Theory
	Contact hours (theory, practical)	3Theory
4	Prerequisites/corequisites	B.Sc. degree in biology, Food Science. Nutrition or related field
5	Program title	MSc in Food Science and Technology
6	Program code	037
7	Awarding institution	University of Jordan
8	School	School of Agriculture
9	Department	Human Nutrition and Food Technology
10	Level of course	Post Graduate
11	Year of study and semester (s)	2nd semester/every year
12	Final Qualification	MSc
13	Other department (s) involved in teaching the course	
14	Language of Instruction	English
15	Date of production/revision	March 2020

16. Course Coordinator:

Office no. 57, 12:30-3:00 (Sun., Tue., and Thurs.) 10:00-12:00 (Mon., Wed.). h.qadiri@ju.edu.jo

17. Other instructors:

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

18. Course Description:

This course provides the principles and application of food mycology (mold and yeast) as food spoilage agents, mycotoxins, interaction with food spoilage bacteria, foodborn diseases and their uses in biotechnology.

19. Course aims and outcomes:

<p>A- Aims:</p> <ol style="list-style-type: none"> 1. Understanding mycology evolution and different microbial ecologies. 2. Knowing different types of molds and yeasts, their metabolism, genetics and response to change in environment and food. 3. Knowing biotechnology, industry and genetic engineering. 4. Introducing to diseases and epidemiology. 5. Acquiring basic laboratory skills for counting and identification of molds and yeast. <p>B- Intended Learning Outcomes (ILOs):</p> <p>Successful completion of the course should lead to the following outcomes:</p> <p>A. Knowledge and Understanding: Student is expected to</p> <p>A1- Know mycology evolution and systematic microbiology (taxonomy)</p> <p>A2- Understand the differences and the relationships between molds and yeasts and their species.</p> <p>A3- Understand the principles of mold and yeast growth and metabolism.</p> <p>A4- Understand the meaning of molds and yeasts ecology.</p> <p>A5- Know principles of microbial genetics (i.e. essentials of molecular biology, mutation, genome structure, cloning, and gene function and regulation).</p> <p>A6- Introduced to diseases (toxicology of mycotoxins) and epidemiology.</p> <p>A7- Know the microbial biotechnology, industry, and genetic engineering.</p> <p>C. Subject-Specific Skills: Student is expected to</p> <p>C1- Identify molds and yeasts on the basis of structural, morphological, and biochemical characteristics.</p> <p>C2- Measure microbes respond to changing in environmental factors in order to survive, interaction with other food spoilage bacteria.</p> <p>C3- Control growth and metabolism of molds and yeasts by physical, chemical, and antimicrobial agents.</p> <p>D. Transferable Key Skills: Students is expected to</p> <p>D1- Acquire laboratory skills in molds and yeasts counting and identification.</p> <p>D2- Acquire skills in manuscripts writing (Abstract, introduction, methodology, results and discussion and conclusion)</p>
--

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
I. General principles: Introduction, importance, and significance of food fungi	3/ 2nd	Prof. Hamzah Al-Qadiri	A-2, B-1, C-1	Exam, Assignments.	Chapters: 1, 2, 3

<p>Taxonomy and classification</p> <p>Characteristics of fungi(morphological, ecological, physiological, cultural, genetic, etc)</p> <p>Factors affecting the growth of fungi and other microorganisms in food:</p> <p>Intrinsic factors:</p> <p>Ph</p> <p>Moisture (water activity Aw)</p> <p>Oxidation reduction potential (Eh)</p> <p>Nutrient content</p> <p>Others</p>					
<p>Extrinsic factors:</p> <p>Temperature of storage</p> <p>Relative humidity</p> <p>Gases</p> <p>Others</p>	5/ 3-4 th	Prof. Hamzah Al-Qadiri	A-2, C-1, D-1	Exam, Assignments.	Chapters: 5, 7,
<p>II. Food spillage by fungi :</p> <p>Acid and non acid foods</p> <p>Raw foods:</p> <p>Fruits and vegetables</p> <p>Grains and cereals</p> <p>Meat and fish</p> <p>Processed foods</p> <p>Food preserves</p> <p>Dried foods</p> <p>Food stored at low temperatures</p> <p>Canned foods</p> <p>Pickled foods</p>	5/ 3-4 th	Prof. Hamzah Al-Qadiri	A-3, B-1, C-2, C-4, D-1, D-2	Exam, Assignments.	Chapters: 10, 11
<p>III. Methods of controlling the growth of fungi in food:</p> <p>physical:</p> <p>High temperatures</p> <p>Low temperature</p> <p>Drying</p> <p>Irradiation</p> <p>Filtration</p> <p>chemical</p>	3/ 12-13 th	Prof. Hamzah Al-Qadiri	A-6, C-4	Exam, Assignments.	Chapters: 18

Preservatives: Benzoate, ascorbate and NaCl Gases (CO ₂), (N)					
IV. food born diseases by fungi Introduction Mycotoxins: Aflatoxins Alternaria toxins Citrinin Ocharatoxins Patulin Penicillic acid Sterigmatocysin Fumonisin Ergotism Toxicity and mode of action Control Mushroom As edible as poisonous agents					
Practical Part					
Student should exercise and experiment the isolation, purification, characterization and enumeration of selected molds and yeast important in food.					

21. Teaching Methods and Assignments:

<p>Learning Methodology</p> <p>The course includes theoretical (3 lectures/ week). Learning methods includes lecture, discussions, doing presentations and writing relevant tem papers.</p>

22. Evaluation Methods and Course Requirements:

Evaluation	Point %	Date
Midterm Exams Mid-term theory exam	25	
Term papers and presentations	35	Throughout the course
Final theory Exam	40	To be assigned by the registration

22. Evaluation Methods and Course Requirements:

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

ILO/s	Evaluation Method
A. Knowledge and Understanding (A1-A..)	
B. Intellectual Analytical and Cognitive Skills (B1-B..)	
C. Subject Specific Skills (C1-C....)	
D. Transferable Key Skills (D1-D3...)	

23. Course Policies:

A- Attendance policies:

According to the regulations applied at The University of Jordan.

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

According to the regulations applied at The University of Jordan.

C- Health and safety procedures:

According to the regulations applied at The University of Jordan. (Biosafety Level I and II).

D- Honesty policy regarding cheating, plagiarism, misbehaviour:

According to the regulations applied at The University of Jordan.

E- Grading policy:

According to the regulations applied at The University of Jordan.

F- Available university services that support achievement in the course:

According to the regulations applied at The University of Jordan.

24. Required equipment: (Facilities, Tools, Labs, Training...)

Data show, access to international journals.

25. References:

Required book (s), assigned reading and audio-visuals:

- Hocking, A.D., pill, J.I., Samson, R.A. and Thorne, U. (2006). *Advances in Food Mycology*. Published by Springer Science and business media Inc. NY.

Recommended books, materials, and media:

- Alexopoulos, C.J. (1960) *Introductory Mycology*, John Wiley and Sons, Inc., New York
- Barr, D.J.S., McLaughlin, D.J., McLaughlin, E.O. and Linuke P.A.(2001).
- Busby, W.F. and Wogan, G.N. (1979). *Food born Mycotoxins and Alimentary Mycotoxicoses*. IN (Food Born Infections and Intoxication, CH. XI, H. Riemann and F.L. Bryan Eds. Academic Press, NY
- Christiansen, C.M (1975). *Mold, Mushrooms and Mycotoxins*. University of Minnesota press. Minneapolis.
- Jay, J.M. (2000). *Modern Food Microbiology*. Chap.2 and 30. Aspen publishers Inc., Gaithersburg, Maryland.
- Pitt, J.I. and Hocking, .A.D. (2009). *Fungi and food spoilage*, 3rd edition., Springer Science, London
- Samson, R.A. et al. (1992). *Modern Methods in Food Mycology*.

26. Additional information:

--

Name of Course Coordinator: Prof. Hamzah Al-Qadiri Signature: ----- Date: March 5, 2020

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----