

Course Syllabus

1	Course title	Toxicology in Foods and Nutrition
2	Course number	603942
3	Credit hours (theory, practical)	2
	Contact hours (theory, practical)	2
4	Prerequisites/corequisites	
5	Program title	PhD in Food Science
6	Program code	032
7	Awarding institution	The University of Jordan
8	School	Graduate Studies
9	Department	Nutrition and Food Technology
10	Level of course	PhD
11	Year of study and semester (s)	First semester
12	Final Qualification	PhD
13	Other department (s) involved in teaching the course	Non
14	Language of Instruction	English
15	Date of production/revision	2019

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.
 Prof. Ghadeer F. Mehyar, 11:00-12:00 Sunday, Tuesday and Thursday
 10:00-11:00 & 12:00 :14:00 Monday and Wednesday
 g.mehyar@ju.edu.jo

17. Other instructors:

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

18. Course Description:

This course provides graduate students with coverage of the principles and concepts of toxicology to deal with the environmental, industrial, agricultural and food safety with respect to toxic and potentially toxic chemicals. Toxicology of foods and nutrition, risk assessment, pesticides, microbial toxins, food additives and naturally occurring toxins of foods are included.

19. Course aims and outcomes:

<p>A- Aims:</p> <ol style="list-style-type: none">1. Introducing the toxicology science in general with special reference to toxicology of foods and during nutrition.2. Recognizing different types of toxic and potentially toxic agents in foods.3. Understanding the mechanism of allergies and sensitivities and other toxicity reactions.4. Introducing genetically modified food and determine their potential health effects.5. Determine potential nutritional components that are potential toxic and their health risks.6. Analyzing dose response, safety and risk assessment of toxic substances. <p>B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to</p> <p>A. Knowledge and Understanding: Student is expected to</p> <p>A1- Determine the meaning of food and nutritional toxicity.</p> <p>A2- Correlate food type with its potential toxin(s).</p> <p>A3- Understand food allergy, sensitivity and genetically modified foods.</p> <p>A4- Understand different sources of toxins in foods such as microbial, chemical, contaminants (such as pesticides, herbicides and food additives).</p> <p>A5- Be introduced to body responses to toxins and how it metabolize different toxins.</p> <p>B. Intellectual Analytical and Cognitive Skills: Student is expected to</p> <p>B1- Learn how to control food toxicity from different sources.</p> <p>B2- Learn beneficial ways of using toxins such as in medicine and antibiotics.</p> <p>B3- How to deal with different foods that contain toxins.</p> <p>C. Subject-Specific Skills: Student is expected to</p> <p>C1- Identify toxins on the basis of structure, nature and toxicity effect.</p> <p>C2- Determine effect of food processing conditions on induction of toxins in foods.</p> <p>C3- Determine the methods to control, detect and measure levels of toxins in foods.</p> <p>D. Transferable Key Skills: Students is expected to</p> <p>D1- Skills to identify different toxins and their potential effect on foods.</p> <p>D2- Skills to control occurrence of toxins in foods and how to deal with food(s) that contain toxins.</p>

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction to toxicology: Types of toxicants in	2/ 1 st	Prof. Ghadeer Mehyar	A-1	Exams	Ray and Bhunia Shibamoto and

food: microbial, occurring naturally, pesticides, additives					Bjeldanes
Epidemiology of foodborne diseases.	2/ 2 nd	Prof. Ghadeer Mehyar	A-2, A-3, A-4, C-1	Exams	Chapter 25 & 26 Ray and Bhunia
Microbial intoxications and infections: bacterial, fungal, viral and parasites.	3/ 3-4 th	Prof. Ghadeer Mehyar	A-2, C-1	Exams	Chapter 25 & 26 Ray and Bhunia
Students presentations	5/ 4-5 th	Prof. Ghadeer Mehyar	B-1 to B-3, D-1, D-2	Exams	
Bacterial toxicology: - <i>Clostridium botulinum</i> - <i>Staphylococcus aureus</i> , - <i>Clostridium perfernges</i> - <i>Bacillus cereus</i> - <i>Salmonellosis</i> - <i>Listeria monocytogenes</i>	3/ 6-7 th	Prof. Ghadeer Mehyar	A-4, B-1 to B-3, C-1, D-1, D-2	Exams	Chapter 5 Helferich and Winter
Fungal toxicology: - Aflatoxins and other mycotoxins	1/ 7 th	Prof. Ghadeer Mehyar	C-1, B-1, D-1, D-2	Exams	Chapter 5 Helferich and Winter Chapter 8 Diaz
Toxicants occurring naturally in foods of plants, animals and mushrooms	1/ 8 th	Prof. Ghadeer Mehyar	A-4, B-1, D-1, D-2	Exams	Chapter 1 Helferich and Winter Chapter 8 Diaz
Food additives, pesticides, contamination of foods.	1/ 8 th	Prof. Ghadeer Mehyar	A-4, B-1, D-1, D-2	Exams	Chapter 7 & 8 Helferich and Winter
Students	5/ 9-10 th	Prof. Ghadeer	B-1 to B-3, D-	Exams &	

presentations		Mehyar	1, D-2	reports	
Radioactive and heavy metal contamination of foods.	1/ 11 th		A-4		Chapter 16 Kotsonis and Mackey

21. Teaching Methods and Assignments:

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

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:
Students outcome grades
Students evolutions
Course evaluation

23. Course Policies:

A. Attendance policies:
In case if the absence exceeded 15%, the student will automatically will fail the course.

B- Absences from exams and handing in assignments on time:
Makeup exam will be assigned. Postponing the assignment delivery time could be provided.

C- Health and safety procedures:
Are instructed from the beginning of the course.

D- Honesty policy regarding cheating, plagiarism, misbehavior:
Withdrawal of the exam

E- Grading policy:
It is given to the students from the beginning of the course.

F- Available university services that support achievement in the course:
Labs are well equipped for this purpose.

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

Food microbiology laboratory.

25. References:

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

Diaz, D.2005. The Mycotoxin Blue Book. Nottingham University Press. Nottingham, UK.

Helferich, W. and Winter, C.K., 2001. Food Toxicology, CRC Press, London, N.Y. (available on line).

Kotsonis FN and Mackey MA. 2001. Nutritional Toxicology. 2nd edition. Taylor and Francis Inc. NY. (available on line).

Ray, B and Bhunia, A. 2008. Fundamental Food Microbiology. 4th edition. CRC Press. Taylor & Francis Group, NW.

Recommended books, materials, and media:

Loannidis, C., 1998. Nutrition and Chemical Toxicology, John Wiley & sons, N.Y.

Sharma, R.P. and Sulnkhe, 1991. Mycotoxins and Phycotoxins, CRC Press, N.Y.

Shibamoto, T. and Bjeldanes, L.F., 1993. Introduction to Food Toxicology, Academic Press, San Diego.

Watson DH. 2000. Pesticide, Veterinary and Other Residues in Food. CRC Press LLC. FL (available online).

Topics of toxicology in electronic journals and in the reliable websites.

26. Additional information:

Non

Name of Course Coordinator: -----Prof. Ghadeer F. Mehyar--Signature: ----- Date: 28th Nov 2019--

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

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

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

Dean: --Prof. Hani Al Dmoor----- -Signature: -----