Course specifications

(Postgraduate Degree)

Course Title:	**Mycotoxins**
Course Code:	**532MBIO**
Program:	**M.Sc in Microbiology**
Department:	**Botany and Microbiology**
College:	**Science**
Institution:	**King Saud University**

Table of Contents

A. Course Identification

1. Credit hours:
2. Course type ☒ Required ☐ Elective
3. Level/year at which this course is offered: Second Level
4. Pre-requisites for this course (if any)**:** NA
5. Co-requisites for this course (if any)**:** NA

6.Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	28	100 %
2	**Blended**		
3	**E-learning**		
4	**Correspondence**		
5	**Other**		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	20
2	**Laboratory/Studio**	
3	**Seminars**	8
4	**Others** (specify)	
	Total	28
Other Learning Hours*		
1	**Study**	30
2	**Assignments**	7
3	**Library**	15
4	**Projects/Research Essays/Theses**	8
5	**Others**(specify)	
	Total	60

***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

Identify and classify the main fungal toxins and their relationship to human health, the environment and biological systems.

2. Course Main Objective

To identify toxins transmitted by food and to define the student's composition and the conditions that help to make them and their health and economic risks.

3. Course Learning Outcomes

	Course Learning Outcomes (CLOs)	AlignedPLOs*
1	**Knowledge**	
1.1	Students will be able to recognize the general properties of fungal toxins	K1.1
1.2	Students will be able to do different ways to detect mycotoxins.	K1.3
1.3	Students will be able to determine the basic criteria for classifying mycotoxins	K1.2
1...		
2	**Skills**	
2.1	Students will be able to prepare standard operating protocols for mycotoxin techniques.	S2.2
2.2	Students will be able to control and reduce mycotoxins in practice.	S2.3
2.3	Students will be able to use modern technology to analyze seeds contaminated with mycotoxins.	S2.4
3	**Competence**	
3.1	Students will be able to predict and interpret the results of mycotoxin analysis.	C3.1
3.2	Students will be able to work as a team in safely eliminating seeds contaminated with mycotoxins in the environment using an interactive research strategy.	C3.2 C3.3
3.3	Students will be able to prepare and design oral presentations and educational posters to raise awareness of the danger of seeds contaminated with mildew.	C3.5

* Program Learning Outcomes

C. Course Content

No	List of Topics	Contact Hours
1	Definition of fungal toxins	2
2	Main fungal toxins	4
3	Mycotoxins and human health	4
4	Mechanic effect of fungal toxins and their relationship to humans	4
5	Causes of mycotoxins	2
6	Methods of detection of fungal toxins	2
7	Fungal toxins in meat and meat products	2
8	Prevent and reduce fungal toxins	2
9	Chemistry and control of fungal toxins	2
10	International legislation for mycotoxins	2
11	Analytical methods for contamination of fungal toxins in seeds (peanut, corn)	2
Total		28

D. Teaching and Assessment

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

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge**		
1.1	Students will be able to recognize the general properties of fungal toxins	Lectures, presentations, Practical	Quizzes, exams, reports, assignments, and discussions
1.2	Students will be able to do different ways to detect mycotoxins.		
1.3	Students will be able to determine the basic criteria for classifying mycotoxins.		
2.0	**Skills**		
2.1	Students will be able to prepare standard operating protocols for mycotoxin techniques.	**Practical.** **Critical reading**	**Discussion, Reports**
2.2	Students will be able to control and reduce mycotoxins in practice.		
2.3	Students will be able to use modern technology to analyze seeds contaminated with mycotoxins.		
3.0	**Competence**		
3.1	Students will be able to predict and interpret the results of mycotoxin analysis.	Organization and Planning	
3.2	Students will be able to work as a team in safely eliminating seeds contaminated with mycotoxins in the environment using an interactive research strategy.	setting personal goals making plans	Develop an observation protocol and write feedback . • Write a progress report . presentation
…	Students will be able to prepare and design oral presentations and educational posters to raise awareness of the danger of seeds contaminated with mildew.	managing time	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	6	30%
2	Worksheet	4	10%
3	Discussion	9	10%
4	Presentation	11	10%
5	Final Exam	15	40%
6	Midterm exam	6	30%
7			
8			

***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 2hr/ week. - E-mail

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1-Mycotoxins,Human Health &Environment, Prof. Dr. Mohamed Abdel Fattah, BUSTAN Knowledge Library 2015, Alexandria. 2- Bacteriological and Fetal Food Poisoning,Prof.Dr. Amr Abdel Rahman Al Banna, Modern Knowledge Library, 2011, Alexandria.
Essential Reference Materials	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC164220/ http://www.who.int/news-room/fact-sheets/detail/mycotoxins WHO | World Health Organization http://www.fao.org | FAO | Food and Agriculture Organization of the United Nations
Electronic Materials	Web Sites, Facebook, Twitter.
Other Learning Materials	

2. Educational and researchFacilities and Equipment Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms, laboratories, demonstration rooms/labs
Technology Resources (AV, data show, Smart Board, software, etc.)	data show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	1-Chromatographic method• using Thin Layer (TLC) 2-High performance liquid• chromatography (HPLC) 3- Gas chromatography (GC)•

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Student Observe teaching by colleagues and analyze teaching according to the established observation protocol	Direct
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, Peer Reviewer.	Direct
Quality of learning resources.	Grading and Assessing Student Learning. Department and Curricular Work	Direct

Evaluation Areas/Issues (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	