



الكيمياء الحيوية  
Biochemistry  
كلية العلوم  
Faculty of Science

**KING ABDULAZIZ UNIVERSITY**  
**FACULTY OF SCIENCE**  
**GIRLS'S SECTION**

**Course Syllabus**

<b>COURSE DETAILS</b>	
<b>SEMESTER</b>	1 <sup>st</sup> Semester 2021
<b>DEPARTMENT</b>	BIOCHEMISTRY
<b>COURSE CODE</b>	BIOC 422
<b>COURSE TITLE</b>	MICROBIAL TOXINS
<b>NUMBER OF CONTACT HOURS</b>	2 HOURS
<b>CLASS TIME</b>	(13-13:50) MONDAY & WEDNESDAY
<b>SECTION</b>	IAR
<b>COURSE INSTRUCTOR DETAILS</b>	
<b>INSTRUCTOR NAME</b>	Dr. AYAT AL-GHAFARI
<b>OFFICE NUMBER</b>	2-2133
<b>OFFICE HOURS</b>	MONDAY and WEDNESDAY (9:00 am-13:00 pm)
<b>WEBSITE</b>	<a href="http://abalgafari.kau.edu.sa">http://abalgafari.kau.edu.sa</a>
<b>E-MAIL</b>	abalgafari@kau.edu.sa

**I. COURSE DESCRIPTION**

The goal of "BIOC 422" course is to introduce undergraduate students at the Biochemistry Department to basic concepts of microbial toxicology. The instructor will address different types of toxic products of microorganisms, exposure routes and basic mechanisms of their actions at the level of the cell, organ and the whole organism, the possible negative effects that they can cause on human health, and the different methods used in detection of microbial toxicity.

## **II. COURSE PREREQUISITES**

Enzyme course: BIOC 231

## **III. STUDENT LEARNING OUTCOMES**

By the end of this course, students will be able to:

1. To list microbial toxins that cause human disease and describe the mechanism of action of each toxin.
2. To differentiate between exotoxins and endotoxins and their mechanisms of action.
3. To recognize the possible beneficial uses of microbial toxins.

**Skill Outcomes---** by the end of this course, students should be able to:

1. Predict the problem that may occur due to different factors that leading to toxicosis.
2. Develop their ability to link between the modes of action of toxins and how can be used to produce useable products (innovative thinking).
3. Extract facts and build their own impression for the best approach in dealing with the different methods used in diagnosis, treatment, and preventing of microbes-induced toxicity.

## **IV. COURSE TOPICS**

<b>No</b>	<b>List of topics</b>
<b>1</b>	Introduction to microbial toxins
<b>2</b>	Exotoxins: Neurotoxins (tetanus toxin)
<b>3</b>	Exotoxins: Anthrax toxin- Diphtheria toxin
<b>4</b>	Exotoxins: Cholera toxin- E-coli toxins (O157:H7)
<b>5</b>	Endotoxins: Salmonella
<b>6</b>	Endotoxins: Typhoid fever
<b>7</b>	Algal Toxins
<b>8</b>	Fungal toxins: Aflatoxins
<b>9</b>	Ergot alkaloids
<b>10</b>	Mushroom toxins
<b>11</b>	Application of microbial toxins
<b>12</b>	Vaccines
<b>13</b>	Biological control
<b>14</b>	Biological weapons

## V. TEACHING LEARNING STRATEGIES

To do well, students should attend virtual Blackboard classes and take very detailed notes. You should rely on your lecture notes rather than the text as your primary study resource. **You will be responsible for everything covered in lecture, but not responsible for material that is covered in the text but not in lecture.** It is not possible to cover all the topics in the text. To get most out of the lectures, it is recommended you read the text before lecture, and then reread the text in more detail after the lecture to make sure you understand all concepts. The lectures move quite rapidly, so reading the text before lecture will improve your comprehension. **Always go over your lecture notes within a day of the lecture.**

## VI. POLICIES

### **Attendance & Tardiness:**

- Any student-missing class/classes will be counted absent and her absence will fall within the 25% absence range.
- It is the student's responsibility to make sure she is not missing any exam, quizzes or any other course class assignments. All students are responsible for work missed during their absence. The course instructor is **NOT** obliged to repeat her lecture or coursework missed by the student due to her absence.

### **Students are expected to meet the following:**

- You will be marked absent if you enter the virtual class after 20 minutes of starting time.
- Absenteeism for more than 25% of allocated course lectures, will entitle the instructor to stop you from attending the final exam.
- Any late/missed assignments will not be accepted after the due date, automatically resulting in a zero.

## VII. COURSE EVALUATION/GRADING

<b>Indicator</b>	<b>Points</b>
Assignments	20
Oral exam and class participation	10
Periodical exam	10
Midterm exam	20
Final exam	40
<b>Total</b>	<b>100</b>

## **VIII. GRADING SCALE**

95-100	=	A+
90-94	=	A
85-89	=	B+
80-84	=	B
75-79	=	C+
70-74	=	C
65-69	=	D+
60-64	=	D
<60	=	F

## **IX. TEXTS & MATERIALS**

1. ADP – Ribosylating toxin by Aktories, Ed (1992). Springer – Verlag (Germany).
2. Principles of Microbiology by R.M. Atlas (1997), 2nd edition, McGraw-Hill (USA).

## X. COURSE PLAN

<b>Weeks</b>	<b>Date</b>	<b>Subject/Topic</b>	<b>Exams</b>
<b>1</b>	30-8-2020/03-09-2020	Introduction to course syllabus + General introduction to toxicology	
<b>2</b>	06-09-2020/10-09-2020	General introduction to bacterial toxins	
<b>3</b>	13-09-2020/17-09-2020	General introduction to bacterial toxins	
<b>4</b>	20-09-2020/24-09-2020	Bacterial exotoxins	
<b>5</b>	27-09-2020/01-10-2020	Bacterial exotoxins	
<b>6</b>	04-10-2020/08-10-2020	Bacterial exotoxins	<b>Periodical exam Wednesday 07/10/2020</b>
<b>7</b>	11-10-2020/15-10-2020	Bacterial endotoxins	
<b>8</b>	18-10-2020/22-10-2020	Bacterial endotoxins	
<b>9</b>	25-10-2020/29-10-2020	Bacterial endotoxins	
<b>10</b>	01-11-2020/05-11-2020	Algae toxins	
<b>11</b>	08-11-2020/12-11-2020	Algae toxins	<b>Midterm Exam Wednesday 11/11/2020</b>
<b>12</b>	15-11-2020/19-11-2020	Fungal toxins	
<b>13</b>	22-11-2020/26-11-2020	Fungal toxins	
<b>14</b>	29-11-2020/03-12-2020	Fungal toxins	
<b>15</b>	06-12-2020/10-12-2020	Assignments	
<b>16-17-18</b>	13-12-2020/31-12-2020	<b>FINAL EXAMS</b>	