



Course Specifications

Revised November 2019

Course Title:	Immunology
Course Code:	4013372 -3
Program:	BSc Microbiology
Department:	Department of Biology
College:	Faculty of Applied Science – Department of Biology
Institution:	UM AL – QURA UNIVERSITY
Revision Date	November 2019

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A. Course Identification

1. Credit hours: 3 hours
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 4th Year / Level 6
4. Pre-requisites for this course (if any): Haematology (4013321-3)
5. Co-requisites for this course (if any):

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50 %
2	Blended		-
3	E-learning		-
4	Correspondence		-
5	Other	30	50 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	42
3	Tutorial	-
4	Practical/Field work/Internship	6
5	Others (specify)	30
	Total	102
Other Learning Hours*		
1	Study	30
2	Assignments	8
3	Library	15
4	Projects/Research Essays/Theses	10
5	Others (specify)	-
	Total	63

* 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

This course is designed for students of applied microbiology to cover the basic aspects of immunology, a broad understanding of the immune system and its functions. Topics include: activation and regulation of innate and adaptive immunity and the principles governing vaccination; the molecular basis of antigen specificity; antibody structure and interaction with antigens; disorders of the immune system; transplantation immunology; the application of immunological reactions for the diagnosis and monitoring of disease; and the use of immunological techniques as analytical tools in the clinical laboratory.

2. Course Main Objective

❖ **After completing this course the student should be able to:**

- Define the immunology
- Summarize the general functions of immune system
- Differentiate between Innate immune system and Adaptive immune system
- Understand why do we need an immune system?
- Understand how does the immune system work efficiently and without killing us?
- define the vaccination
- List the types of vaccines
- Describe the methods used for vaccines production
- Explain why we need the vaccination
- Explain the physiology of the immune system,
- list the beneficial role of the immune system
- understand the concept and principal of organ transplantation
- list the advantageous and complications of organ transplantation
- Evaluate the methods for organ maintenance
- Memorize the immune-related diseases
- Discuss the mode of action of vaccines in the body.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge: <ul style="list-style-type: none"> ❖ Upon successful completion of this course The student will be able to: <ul style="list-style-type: none"> • Define the immunology. • list the general functions of immune system. • memorize the components of <u>Innate immune system</u> and <u>Adaptive immune system</u>. • Memorize the immune-related diseases • define the vaccination • outline the role of vaccination to protect the human body • List the types of vaccines • write the concept and principal of organ transplantation • list the advantageous and complications of organ transplantation • describe methods for organ maintenance 	
2	Skills:	

CLOs		Aligned PLOs
2.1	<p>Cognitive skills to be developed</p> <p>❖ Upon successful completion of this course The student will be able to:</p> <ul style="list-style-type: none"> • Differentiate between <u>Innate immune system</u> and <u>Adaptive immune system</u> • Summarize why do we need an immune system. • Judge how the immune system works efficiently and without killing us. • Explain why we need the vaccination • Explain the physiology of the immune system, • Write the principal of organ transplantation • Summarize the complications of organ transplantation • Evaluate the methods for organ maintenance • Memorize the immune-related diseases • Discuss the mode of action of vaccines in the body. 	
2.2.	<p>Psychomotor Skills</p> <p>❖ Upon successful completion of this course, the student is expected to be able to:</p> <ul style="list-style-type: none"> • Perform the laboratory experiments precisely • Operate all devices in lab • Prepare the different media used in immunology lab 	
3 Competence:		
3.1	<p>❖ Upon successful completion of this course, the student is expected to be able to:</p> <ul style="list-style-type: none"> • Developing oral presentations. • Communicating personal ideas and thoughts. • Work independently and as part of a team to finish some assignments. • Communicate results of work to others. • Use of needed precautions when dealing with pathogen microorganisms • demonstrate professional attitudes and behaviors towards others. • propose the smart questions • understand and dissecting the problem so that it is fully solved understood. • Demonstrate the assertiveness for his decision. • Demonstrate his capability for the responsibility and Accountability • show Effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, non-verbal communication, good listening for the others, questioning, good manners, problem solving, social awareness, self-management, responsibility and accountability). • Enhancing the ability of students to use computers and internet. • Interpret the laboratory data. • Know how to write a report. 	

C. Course Content

Topics to be Covered		
Topic	No of Weeks	Contact hours
<ul style="list-style-type: none"> ❖ Introduction: to the principle immunology <ul style="list-style-type: none"> -Definition of immunology - Historical background about the immunology -Roles of the scientists in this field -important expressions: Innate immune system, adaptive immune system Layered defense, Surface barriers, Natural killer cells. 	1	2
<ul style="list-style-type: none"> ❖ General functions of the immune system <ul style="list-style-type: none"> - Forms, size of immune cells - Immune system - Type of immune system 	1	2
<ul style="list-style-type: none"> ❖ Innate immune system: <ul style="list-style-type: none"> Surface barriers, Inflammation, Complement system, Cellular barriers, Natural killer cells. -Functions of innate immune system 	3	6
<ul style="list-style-type: none"> ❖ Adaptive immune system: <ul style="list-style-type: none"> also known as the acquired immune or, more rarely, as the specific immune system: Lymphocytes, Killer T cells, Helper T cells, Gamma delta T cells, B lymphocytes and antibodies). -Functions of innate immune system 	3	6
<ul style="list-style-type: none"> ❖ Vaccines : <ul style="list-style-type: none"> - principle of vaccination - Historical background about vaccines -Different Types of Vaccines: [Live, attenuated, Inactivated/Killed, Toxoid (inactivated toxin), Subunit/conjugate, Polysaccharide and polypeptide, Surface antigen (recombinant) vaccines] - Vaccines mode of action in the body. 	3	6
<ul style="list-style-type: none"> ❖ production of vaccines ❖ Traditional methods and the concept of the genetically engineered vaccines 	1	2
<ul style="list-style-type: none"> ❖ Organ Transplantation <ul style="list-style-type: none"> - Definition of Organs Transplantation - Principles of Organs Transplantation - Types of Transplantation: - Complications Of Organ Transplantation (Rejection, Malignancy). - Sources of organs for transplantation - Methods for organ maintenance 	2	4
	14 weeks	28hrs

D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	<ul style="list-style-type: none"> ❖ Upon successful completion of this course The student will be able to: <ul style="list-style-type: none"> • Define the immunology. • list the general functions of immune system. • memorize the components of <u>Innate immune system</u> and <u>Adaptive immune system</u>. • Memorize the immune-related diseases • define the vaccination • outline the role of vaccination to protect the human body • List the types of vaccines • write the concept and principal of organ transplantation • list the advantageous and complications of organ transplantation • describe methods for organ maintenance 	<ul style="list-style-type: none"> ❖ The methodology includes a combination of lectures by the lecturer, seminar presentation by the students and web-interactions. ❖ At the end of the programme, students will be divided into groups for seminar presentation on important areas of the course to assess their understanding and comprehension of the course. ❖ All students will be involved in on-line learning process and each student is required to create an E-mail address to facilitate student web interactions. ❖ Using images and movies ❖ Encouraging students to collect the new information about immunology ❖ Availability of the reference books and scientific sites concerning the immunology in the internet. 	<ul style="list-style-type: none"> • Periodical exam and reports 10% • Mid- term theoretical exam 20% • Mid-term practical exam 5% • Final practical exam 15% • Final exam 50%
2.0	Skills		
2.1	<p>Cognitive skills</p> <ul style="list-style-type: none"> ❖ Having successfully completed the course students should be able to: <ul style="list-style-type: none"> • differentiate between <u>Innate immune system</u> and <u>Adaptive immune system</u> 	<ul style="list-style-type: none"> - Lectures -Brain storming -Discussion 	<ul style="list-style-type: none"> - Exam must contain questions that can measure these skills. - Quiz and exams - Discussions after the lecture.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	<ul style="list-style-type: none"> summarize why do we need an immune system. Judge how does the immune system work efficiently and without killing us. explain why we need the vaccination explain the physiology of the immune system, write the principal of organ transplantation summarize the complications of organ transplantation evaluate the methods for organ maintenance memorize the immune-related diseases discuss the mode of action of vaccines in the body. 		
2.2	<p>Psychomotor Skills</p> <ul style="list-style-type: none"> ❖ Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> perform the laboratory experiments precisely operate all devices in lab prepare the different media used in immunology lab 	<ul style="list-style-type: none"> - Follow up students the students in lab and during carryout all the laboratory experiments 	<ul style="list-style-type: none"> - Evaluate the efforts of each student in preparing the report. -Evaluate the scientific values of reports. -Evaluate the work in team -Evaluation of students presentations -Practical exam.
3.0	Competence		
3.1	<ul style="list-style-type: none"> Developing oral presentations. Communicating personal ideas and thoughts. Work independently and as part of a team to finish some assignments. Communicate results of work to others. Use of needed precautions when dealing with pathogen microorganisms Demonstrate professional attitudes and behaviors towards others. Propose the smart questions Understand and dissecting the problem so that it is fully solved understood. Demonstrate the assertiveness for his decision. 	<ul style="list-style-type: none"> Lab work . Case Study. Active learning. Small group discussion. Homework (preparing a report on some topics related to the course depending on web sites). Seminars presentation. Practical during carryout the experiments in the lab. 	<ul style="list-style-type: none"> Oral exams. Evaluate the efforts of each student in preparing the report. Evaluate the scientific values of reports. Evaluate the work in team Evaluation of the role of each student in lab group assignment Evaluation of students presentations.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	<ul style="list-style-type: none"> • Demonstrate his capability for the responsibility and Accountability • Show Effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, non-verbal communication, good listening for the others, questioning, good manners, problem solving, social awareness, self-management, responsibility and accountability). • Enhancing the ability of students to use computers and internet. • Interpret the laboratory data • Know how to write a report 		

2. Assessment Tasks for Students

5. Schedule of Assessment Tasks for Students During the Semester

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11	--	5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
Total Marks				100%

*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: 10hrs.**

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	(1. Not book prepared by Dr. Sameer Organjii 2. E. Paul, William (2008) <i>Fundamental Immunology 6th edition</i> . Lippincott Williams & Wilkins.
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Essential References Materials	1. Male, David (2004) <i>Immunology 4th edition</i> . Mosby.
Electronic Materials	- http://www.journals.elsevier.com/clinical-immunology/ - https://en.wikipedia.org/wiki/Immunology
Other Learning Materials	PPT prepared by Prof. Dr. Sameer Organji

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> Class room is already provided with data show The area of class room is suitable concerning the number of enrolled students (68) and air conditioned
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> Digital lab containing 15 computers.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> Incubators, autoclaves, measuring equipment, water bath, digital balances, pH meters, centrifuge, safety facilities. Availability of some reference bacterial strains Different media All chemicals and reagents that needed Availability the immunological kits for pathogens detection

G. Course Quality Evaluation

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching <ul style="list-style-type: none"> Questionaries Open discussion in the class room at the end of the lectures.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department <ul style="list-style-type: none"> Revision of student answer paper by another staff member. Analysis the grades of students.
3. Processes for Improvement of Teaching <ul style="list-style-type: none"> Preparing the course as PPT. Using scientific movies. Coupling the theoretical part with laboratory part Periodical revision of course content.
4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) <ul style="list-style-type: none"> After the agreement of Department and Faculty administrations
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. <ul style="list-style-type: none"> Periodical revision by Quality Assurance Units in the Department and institution

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

H. Specification Approval Data

Prepared by faculty staff: 1. Dr. Sameer Organjii	Signature:
Date Report Completed: November 2019	
Revised by: 1. Dr. Khaled Elbanna 2. Dr. Hussein H. Abulreesh 3. Dr. Shady Elshahawy	Signature:
Date: November 2019	
Program Chair Dr. Hussein H. Abulreesh	Signature:
Dean	Signature:
Date:	