



Course Specifications

Course Title:	Immunology
Course Code:	ZOO 433
Program:	Zoology
Department:	Zoology
College:	Science
Institution:	King Saud University

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A. Course Identification

1. Credit hours: 2 (1+0+2)				
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: Eight level				
4. Pre-requisites for this course (if any): ZOO 332				
5. Co-requisites for this course (if any): no.				

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	14	50%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other Lab	10	50%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	14
2	Laboratory/Studio	10 x2 hr.
3	Tutorial	
4	Others (specify)	
	Total	34

B. Course Objectives and Learning Outcomes

1. Course Description

To learn the history of immunology

To learn the structure of the immune system

To be able to distinguish between innate and acquired immunity (Humoral & Cellular).

To learn the differences between active, passive and adoptive immune vaccination.

To be familiar with the antigen processing and presentation, Complement system, Antibodies and Antigens

To be familiar with hypersensitivity responses, immune deficiencies and autoimmunity.

2. Course Main Objective

The objective of the immunology course to give the student a good back ground about the basic knowledge of the immunology system its development and function.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Define functional anatomy of immune system and lymphoid tissues.	K1
1.2	Recognize the phases of immune responses and mononuclear phagocytes.	K2
1.3	Outline the lymphocyte development and heterogeneity the antigen recognition, presentation the molecular structure of antibody and leucocyte receptors.	K3
1...		
2	Skills :	
2.1	Recognize blood group system and differentiate between immune cells (neutrophils, Eosinophil, basophil, monocyte, and lymphocyte).	S1
2.2	Prepare (adherence, density gradient, cell organelles, gravity) mononuclear leucocytes from peripheral blood.	S2
2.3	Estimate phagocytosis in vitro and in vivo, and perform antibody-antigen binding (Ag-Ig affinity test).	S3
2...		
3	Values:	
3.1	Modify to work in a team to conduct a specific immune research point	V1
3.2	Illustrate independently components of the immune system	V2

C. Course Content

No	List of Topics	Contact Hours
1	Overview of the course and definition of immunology, Innate and acquired Immunity, Components of the immune system	2+2 lab
2	Origin, development and differentiation of immune cells	1+ 2 lab
3	Innate immunity receptors and cytokines secretion	1+2 lab
4	Phagocytosis and antigens recognition	1+2 lab
5	Complement activity pathways	1+2 lab
6	Immunogens and Antigens	1+2 lab
7	Antibody Classes, Functions and regulation of their production.	1+2 lab
8	Molecular and genetic basis for antibody diversity	1+2 lab
9	MHC Molecules Variability of MHC Genes & Products	1+2 lab
10	Biology of T and B cells Differentiation and their receptor.	2+2 lab
11	Immunodeficiency diseases, Allergy, Transplantation and Grafts, Blood Transfusion	1
12		
Total		13

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 and Understanding		
1.1	Define functional anatomy of immune system and lymphoid tissues.	In-class lecturing ppt presentation Laboratory practice and microscopic examination of tissue sections from various organs. Simplifying Immunological mechanism of diseases through show ppt and illustration.	Major and final exams Evaluation of lab reports and examinations Evaluation of lab reports and examinations
1.2	Recognize the phases of immune responses and mononuclear phagocytes.		
1.3	Outline the lymphocyte development and heterogeneity the antigen recognition, presentation the molecular structure of antibody and leucocyte receptors.		
2.0	Skills		
2.1	Recognize blood group system and differentiate between immune cells (neutrophils, Eosinophil, basophil, monocyte, and lymphocyte).	Use of illustrations and schematic diagrams relevant to immune system. Laboratory practice and training. Activities and assignments. Laboratory training on dissecting experimental animals.	Biweekly quizzes. Mid-term and final exams. Evaluation of lab reports and examinations. Evaluation of student projects and activities.
2.2	Prepare (adherence, density gradient, cell organells, gravity) mononuclear leucocytes from peripheral blood.		
2.3	Estimate phagocytosis in vitro and in vivo, and perform antibody-antigen binding (Ag-Ig affinity test).		
3.0	Values		
3.1	Modify to work in a team to conduct a specific immune research point	Use of illustrations and schematic diagrams relevant to immune system. Laboratory practice and training. Activities and assignments. Laboratory training on dissecting experimental animals.	Biweekly quizzes. Mid-term and final exams. Evaluation of lab reports and examinations. Evaluation of student projects and activities.
3.2	Illustrate independently components of the immune system		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Class activates (activities and homework)	5	15%
2	Med-term Exam.	9	15%
3	Lab. Homework	12	5%
4	Lab. Exam.	13	25%
5	Final Exam.	15	40%
6			
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

- Direct supervision by staff member over lab. Sessions.
- Office hours 7 hr/ week

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Maher al-bassiony Hossen [2003] Immunology (required)
Essential References Materials	Abul Abbas Andrew H. Lichtman Shiv Pillai [2015] Basic Immunology; Functions and Disorders of the Immune System 5th Edition and (Electronic version)
Electronic Materials	
Other Learning Materials	Microsoft office package

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Equipped laboratories for immunology analysis lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Immunology Lab kits

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods

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))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	