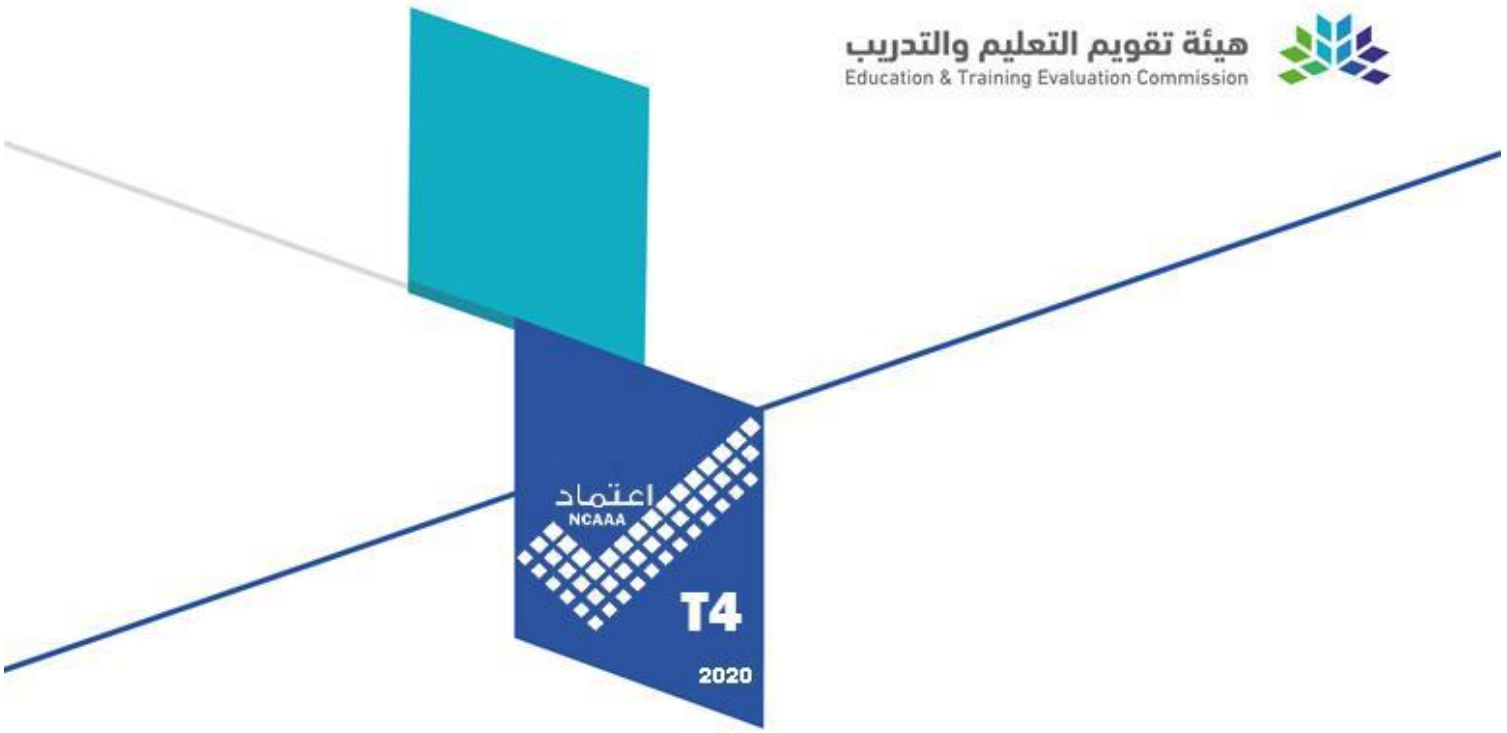
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Immunology
Course Code:	354ZOO
Program:	Bachelor
Department:	Biology
College:	Science
Institution:	Jazan University

Table of Contents

A. Course Identification

1. Credit hours: 2H.
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: **6/3**
4. Pre-requisites for this course (if any)**:** **None**
5. Co-requisites for this course (if any)**:** **None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	12	80%
2	**Blended**	3	20%
3	**E-learning**	--	--
4	**Distance learning**	--	--
5	**Other**	--	--

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**15**
2	**Laboratory/Studio**	**30**
3	**Tutorial**	**-**
4	**Others** (specify)	-
	Total	**45**

B. Course Objectives and Learning Outcomes

1. Course Description

Course Title	Course No.	Credit Units			Year	Level	Pre-Requisite
		Theoretical	Practical	Total			
IMMUNOLOGY	354ZOO	1	1	2	3rd	6th	-----

a) Course Objectives:

This course is designed to provide students with the following concepts:

1- The course will provide the student with basic comprehensive study of the immune system and immune responses to different pathogens.
2- Be able to compare and contrast humoral versus cell-mediated immune responses
3- Be able to compare and contrast the innate versus adaptive immunity.
4- understand the significance the Major Histocompatibility Complex in terms of immune response and transplantation
5- Students will gain some laboratory skills including different immunization methods, serum and plasma preparation and detection of antigen-antibody interactions using different immunological assays.

b) Course Contents:

1- Introduction: Overview of the Immune System, Cells and Organs of the Immune System,

2- Antigens and Immunogens definitions , General Properties of Immunogens, Antigen classification, Epitopes, Hapten, Cross reaction, Antigen receptors, (CD) markers, Major Histocompatibility Complex (MHC), Tolerance.

3- Antibodies: Structure of the Immunoglobulin (Ig), Antibodies Isotypes, Antigen-Antibody Interactions.

4- The Complement System: Activation of the Complement, Biological Activities of Complement.

5- Innate Immunity: Non-Specific Defence Mechanisms.

6- Cell-Mediated Immunity (CMI): Antigen-Presenting Cells (APCs), Antigen Processing and Presentation, Activation of T helper (T_H) Cells, Activation of T cytotoxic (T_C) Cells, Activation of Suppressor T Cells.

7- Antibody Production: Humoral Immune Response.

8- Immunohematology: Blood Group Antigens, Blood Group Systems, The ABO Blood Group System, Isoantibodies.

9- Hypersensitivity (Allergy): Types of Hypersensitivity, Skin Test, Desensitization.

10- Autoimmunity& Immunodeficiency

c) Practical:

Organs and cells of the immune system (the dissection of experimental animals to clarify organs of the immune system) , Blood smears to study white blood cells under microscope, Immuno-precipitation and Agglutination assays, phagocytosis, Blood Typing and Crossmatching, Rhesus factor, Serum protein electrophoresis, ELISA, Immunodiffusion (Ouchterlony test),Skin allergy test, flowcytometry.

d) Assessment:

- Periodic Exams and Quizzes: 30 %
- Assignments, and Classroom Activities: 20 %
- Final exam: 50%

e) Teaching Methods:

- Lectures, Reports and Essay Assignments, Homework, and Web-based Assignments.

f) Text Books:

- **Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. (2017) Roitt's Essential Immunology, 13th Edition.**

g) References:

- **Helen Chapel, Mansel Haeney, Siraj Misbah, Neil Snowden (2014) Essentials of Clinical Immunology, Includes Wiley E-Text, 6th Edition**
- **Richard Coico, Geoffrey Sunshine (2015) Immunology: A Short Course, 7th Edition**
- **William E. Pual (2013) Fundamental Immunology, 7th Edition.**
- **Howard G.C., Bethel D.R (2002) Basic methods in Antibody production and characterization. CRC Press, London.**

2. Course Main Objective

1- The course will provide the student with basic comprehensive study of the immune system and immune responses to different pathogens.

2- Be able to compare and contrast humoral versus cell-mediated immune responses

3- Be able to compare and contrast the innate versus adaptive immunity.

4- understand the significance the Major Histocompatibility Complex in terms of immune response and transplantation

5- Students will gain some laboratory skills including different immunization methods, serum and plasma preparation and detection of antigen-antibody interactions using different immunological assays.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Define all principals, concepts, theories and aspects concerning with immunology.	K1-1
1.2	Differentiate (Compare) between different mechanisms, functions, practices and aspects related to immunological sciences.	K2-1

CLOs		Aligned PLOs
1.3	Interpret by using your knowledge and understanding some of immunological phenomena	K3-2
2	**Skills :**	
2.1	Examine theoretically or practically the slides, photos, diagrams or statements of immunological aspects.	S1-3
2.2	Argue different immunological approaches in laboratory or field or even theoretically.	S2-2
2.3	Design immunological experiment and procedures in laboratory or in the field or even theoretically.	S3-1
3	**Values:**	
3.1	Access multiple sources of information, capture essential information, and distinguish it from extraneous data.	V1-3
3.2	Illustrate awareness of risk assessment and safety observation when dealing with various equipment at various fields.	V2-1

C. Course Content

No	List of Topics	Contact Hours
1	Introduction: Overview of Immunity, Cells and Organs of the Immune System	1
2	Antigen : Antigens and Immunogens definitions , General Properties of Immunogens, Antigen classification, Epitopes, Hapten, Cross reaction, Antigen receptors, Clusters of Differentiation(CD), Major Histocompatibility Complex (MHC), Tolerance.	2
3	Antibodies: Structure of the Immunoglobulin (Ig), Antibodies Isotypes, Antigen-Antibody Interactions.	2
4	The Complement System: Activation of the Complement, Biological Activities of Complement - Cytokines	2
5	Innate Immunity: Non-Specific defence mechanisms. Primary and secondary immune response Cell mediated immune response Humoral immune response	3
6	Immunohematology: Blood Group Antigens, Blood Group Systems, The ABO Blood Group System, Isoantibodies.	1
7	Hypersensitivity Reactions.	2
8	Autoimmunity& Immunodeficiency	1
Total		14

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 all principals, concepts, theories and aspects concerning with immunology.	Lectures, Lab work	Quizzes, Short Answer Question, MCQs, Assignments

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Differentiate (Compare) between different mechanisms, functions, practices and aspects related to immunological sciences.	Lectures, Lab work	Quizzes, Short Answer Question, MCQs, Assignments
1.3	Interpret by using your knowledge and understanding some of immunological phenomena	Lectures, Lab work	Quizzes, Short Answer Question, MCQs, Assignments
2.0	**Skills**		
2.1	Examine theoretically or practically the slides, photos, diagrams or statements of immunological aspects.	Lectures, Lab work	Quizzes, Short Answer Question, MCQs, Assignments
2.2	Argue different immunological approaches in laboratory or field or even theoretically.	Lectures, Lab work, Group Discussion	Quizzes, Short Answer Question, MCQs, Assignments
2.3	Design immunological experiment and procedures in laboratory or in the field or even theoretically.	Lectures, Lab work	Quizzes, Short Answer Question, MCQs, Assignments
3.0	**Values**		
3.1	Illustrate awareness of risk assessment and safety observation when dealing with various equipment at various fields.	Lectures, Lab work	Lab work assessment, Short Answer Question, MCQs,

2. Assessment Tasks for Students

#	*Assessment task	Week Due	Percentage of Total Assessment Score
1	Theoretical written assignment	3	5
2	Theoretical quiz	5	5
3	Mid-term exam	7	10
4	Practical Mid-term exam	9	5
5	Practical assignment or Quiz	11	5
6	Final practical exam	13	20
7	Final Exam	15	50

***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 :

10 Office hours/faculty/week.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. (2017) Roitt's Essential Immunology, 13th Edition.
Essential References Materials	• Helen Chapel, Mansel Haeney, Siraj Misbah, Neil Snowden (2014) Essentials of Clinical Immunology, Includes Wiley E-Text, 6th Edition • Richard Coico, Geoffrey Sunshine (2015) Immunology: A Short Course, 7th Edition • William E. Pual (2013) Fundamental Immunology, 7th Edition.

Electronic Materials	**http://www.roitt.com/default.asp**
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation Classrooms, laboratories, demonstration) (.rooms/labs, etc	1 Lecture room(s) for groups of 50 students .Laboratory for group of 25 students 1
Technology Resources AV, data show, Smart Board, software,) (.etc	AV, Data Show, Smart Board
Other Resources Specify, e.g. if specific laboratory) equipment is required, list requirements or (attach a list	Light microscopes, glassware, chemicals, consumables, .dissection tools

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, Faculty	Direct (Questionnaire)
Effectiveness of assessment	Peer Reviewer	Direct (Cross Check marking)
Extent of achievement of course learning outcomes	Program Leader	Indirect (QA Committee)
Quality of learning resources	QA. Committee	Indirect (Benchmarking)

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	**Board of Biology Program**
Reference No.	**6TH MEETING OF THE BOARD OF BIOLOGY DEPARTMENT 1440-1441**
Date	**Updated/Revised Nov26, 2020**