SYLLABUS

Course Code	*Course Num.*	*Course Name*	*Credit Hours*	*Lec.*	*Lab.*	*Tut.*	*Private study*	*Pre-requisites*	*Course Level*	*Language*
BIO	**212**	**Immunology**	**3**	**2**	**2**	**0**	**5**	**BIO113**	**4**	**English**

A. Instructor information

Name and E-mail	Office phone	Office location	Office hour
Dr Marwa Yousry Abdel Monem Mymohamed@imamu.edu.sa om	-	Building: 323 Level: 4 Room: 4A-444	Sun: 9:00- 10:00 AM Tue: 1:00 – 2:00 PM Wed: 12:00 -1:00 PM

B. Course Description

Introduces the principles of immunology including: development of the immune system, innate immunity, immunoglobulin structure, antigen-antibody reactions, the major histocompatibility complex reactions and antigen presentation, T cell receptors (genetics, structure, selection), T cell activation and effector functions, cytokines, phagocytic cell function, immune responses to infectious organisms and tumors, autoimmune diseases, autoimmunity, allergies, and immune deficiencies. terms.

C. Course Outcomes At the end of this course the student is able to:

Knowledge

- To state the role of the immune system in the human body.
- To describe the function of phagocytes in the non-specific immune system.
- To define the role of B-lymphocytes in the humoral response to outline the major histocompatibility complexes (MHCs) type 1 and 2 and explain their functions.
- To describe professional antigen presenting cells and define their purpose.
- To list the symptoms of the inflammatory response and explain their causes.

Cognitive skills

- To explain how T-cells aid in eliminating pathogens from the body.
- To summarize the role of B-cells and T-cells in the specific immune system.

Interpersonal Skills & Responsibility

- To demonstrate proper immunological laboratory techniques involving microscopy, biochemical.
- To analyze schematics and mechanisms in immunological responses in different settings.

Communication, Information Technology, Numerical

- To illustrate the ability to communicate their ideas with the instructor at all times during and after the class.To operate laboratory instruments and computers.
- To demonstrate ability to use mail and Network in communicating with the others and in submitting home works and assignments.

Psychomotor

- To employ safety measures and operate laboratory instruments during laboratory sessions.
- To apply different diagnostic techniques to predict the causative organism and show the proper antibiotics for their treatment.

D. References

- **Required Textbook:**

- Judith A Owen; Janis Kuby; Jenni Punt; Sharon A Stranford Pat Jones, Kuby Immunology 7th edition, (2013)
- Peter Parham; The Immune System, 3rd edition, (2005)

- **Other references:**

- Journals of immunology.
- http://www.scribd.com/doc/220130732/Kuby-Immunology-7th-Edition-2013#scribd).

E. Topics Outline

E.1. Lectures

List of Topics	Contact hours
• Introduction, basic concepts in immunology, components of the immune system, principles of innate and adaptive immunity.	2
• Innate immunity, different lines and layers of defense, pattern recognition in innate immune system, the complement system, induced innate responses to infections.	4
• Antigen recognition by b-cells, the structure of a typical antibody molecule, interaction between the antibody and specific antigen, diversity of immunoglobulins: VDJ recombination .	4
• Antigen recognition by t cells, antigen processing and presentation: MHC.	2
• Development and survival of lymphocytes, lymphocytes in bone marrow and thymus, positive and negative selection of lymphocytes, survival and maturation of lymphocytes.	4
• The adaptive immune response, T CELL-mediated immunity and cytotoxicity, macrophage activation by armed CD4 TH1 cells, humoral immune response.	4
• Adaptive immunity to infection, infectious agents and how they cause disease, the course of the adaptive response to infection, the mucosal immune system, immunological memory.	2
• Failures of host defense mechanisms, how do pathogens evade the immune system, inherited immunodeficiency diseases, acquired immune deficiency syndrome.	2
• Allergy and hypersensitivity, effector mechanisms in allergic reactions and IGE, hypersensitivity diseases.	2
• Autoimmunity and transplantation, autoimmune responses are directed against self-antigens, responses to alloantigen and transplant rejection, self-tolerance and its loss.	2
• Manipulation of the immune response, extrinsic regulation of unwanted immune responses, using the immune response to fight infections and attack tumors.	2

E.2. Laboratories

Lab No.	Topics	Contact hours
Lab 01	Histological study for lymph system (thymus gland, lymph nodes, spleen, tonsils….).	2
Lab 02	Cell count with haemocytometer. Viability of the cells in normal and pathological cases.	2
Lab 03	Preparation of the blood smear. Lymphocytes isolation using ficoll hypaque technique.	2
Lab 04	Serology (agglutination).	2
Lab 5,6	Precipitation test immunodiffusion test.	2
Lab 07	Principles of ELISA 1.	2
Lab 08	ELISA 2.	2
Lab 09	Fluorescent antibody staining, fluorescent microscopy.	2
Lab 10	Allergy (type one and type two) allergy test.	2
Lab 11	Flow cytometer.	2
Lab 12	Western Blot & SDS Page.	4
Lab 13	Southern Blotting 1.	2
Lab 14	Extraction and purification of B cell genomic DNA.	2
Lab 15	General revision.	2

F. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

G. Exams & Grading System

The semi-official dates of the exams for this course are:

Assessment task	Week Due	Proportion of Total Assessment
Midterm 1	Around 6^{th} -7^{th} week	15 %
Midterm 2	Around 11^{th} -12^{th} week	15 %

Quizzes, attendance, participation, home works	All the semester	10 %
lab reports	All the semester	5%
Lab exam.	Around 15th week	15%
Final exam.	Around 15th -16th week	40%
Total		100 %

Your course grade will be based on Final Exam, Midterms, Homework, Quizzes, Participation, Attendance and Project.

The grading distribution (the lowest passing grade is "D")

A+	A	B+	B	C+	C	D+	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 70)	70, 75)	[70, 65)	[60, 65)	[0, 60)

H. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. ("Immediate family" is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

I. Student Workload

#	Teaching/Learning activities	Contact hours	Frequency	Total contact hours	Self-study hours	Total Self-study hours	Student learning time
5	**Lecture**	2	15	30	2	30	60
2	**Tutorial**	0	0	0	0	0	0
0	**Lab/ practical**	2	15	30	1	15	45
5	**Home work**	0	4	0	2	8	8
4	**Quiz**	0.5	2	1	1	2	3
6	**Midterm**	1.5	2	3	5	10	13
7	**FinalExam**	2	1	2	12	12	14
Total				**66**		**77**	**143**

Executive Rules for Study Regulations and Exams **goo.gl/ykm7t3**

Google Classroom Webpage: http://www.imamm.org/