

Jordan University of Science and Technology
Faculty of Science and Arts
Department of Biotechnology and Genetic Engineering
Second Semester, 2006-2007

Course Information	
Course Title	Immunology
Course Number	B 333
Prerequisites	B 331
Course Website	
Instructor	Dr. Nizar Abo Harfeel
Office Location	PH1-3 rd . Floor
Office Phone	Ext. 23469
Office Hours	
E-mail	
Teaching Assistant	None
Course Description	
<p>This is an introductory course of immunology. It is intended for students in the Biotechnology and Genetic Engineering Department at JUST. The course consists of interactive lectures that incorporate Power Point presentations that help the instructor present the intended ideas clearly. Additionally, the instructor uses the help of pre-made CD animations that come with the book. These animations are utilized throughout the material to extend the explanation of specific ideas. Furthermore, the instructor uses some pre-evaluated educational movies and presentations made and prepared by professional institutions. The instructor incorporated a new technique in this class that is currently used in most immunology laboratories world-wide; it is the flow cytometry, in which the instructor was trained on for quite long time in the recent past. Students are introduced to basic concepts of flow cytometry and are acquainted with its major applications. The textbook, Immunobiology, 6th edition, is the most used text book in immunology at academic institutions in the US and Canada, both for undergraduate and graduate immunology courses. The instructor aims at preparing his students for graduate studies if they intend to do so. The book presents immunological concepts in an interesting and imaginative way that makes learning immunology both easy and exciting.</p>	

Text Book	
Title	Immunobiology, the immune system in health and disease,
Author(s)	Janeway, Travers, Walport, and Shlomchik
Publisher	Garland Science Publishing, 29 West 35 th Street, New York, NY 10001, USA, ISBN: 0 8153 4101 6
Year	2005
Edition	6 th Edition
Book Website	http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowTOC&rid=imm.TOC&depth=2
References	

Assessment Policy		
Assessment Type	Expected Due Date	Weight
First Exam	25 th March, 2007	25 %
Second Exam	1 st May, 2007	25%
Final Exam	3 rd June, 2007	40%
Assignments	Throughout the semester	10%

Course Objectives		Weights
1.	Familiarize students with basic concepts in immunology	20%
2.	Introduce students to the most important theories in immunology	25%
3.	Introduce to the students the different types of failures of the immune system	15%
4.	Present the difference between innate and adaptive immune responses	20%
5.	Introduce the basic concepts in T cell education, survival, and maturation	10%
6.	Familiarize the students with the different types of immunoglobulins and their functions	10%

Teaching & Learning Methods
Power Point presentations, animations, educational movies, illustrations, group visits to flow cytometry facilities

Learning Outcomes: Upon successful completion of this course, students will be familiar with the concepts related to the following topics:		
Related Objective(s)		Reference(s)/Chapters
1. Basic concepts in immunology		1, 2
2. Components of the immune system		1, 2, 3
3. Principles of innate and adaptive immunity		2-5
4. Antigen recognition by B and T cells		3, 4, 5
5. Development, maturation and survival of lymphocytes		3, 7
6. Adaptive Immunity to Infection		7, 8, 9
7. Failures of Host Defense Mechanisms		8-12

Useful Resources
Flow Cytometry manual, Immunobiology animation CD, Book website

Course Content		
Week	Topics	Chapter in Text (handouts)
1-2	Introduction, basic concepts in immunology, components of the immune system, principles of innate and adaptive immunity	1
3-4	Innate immunity , Different lines and layers of defense, Pattern recognition in innate immune	2

	system, The complement system, Induced innate responses to infections	
5-6	Antigen recognition by B-cells , The structure of a typical antibody molecule, Interaction between the antibody and specific antigen, Diversity of Immunoglobulins: VDJ Recombination	3-4
7-8	Antigen recognition by T cells , Antigen processing and presentation: MHC,	3, 5
9	Development and survival of lymphocytes , Lymphocytes in bone marrow and thymus, Positive and negative selection of lymphocytes, Survival and maturation of lymphocytes,	7
10-11	The Adaptive Immune Response , T Cell-Mediated Immunity and cytotoxicity, Macrophage activation by armed CD4 T _H 1 cells, Humoral Immune Response	8-9
12	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	10
13	Failures of Host Defense Mechanisms , How do pathogens evade the immune system, Inherited immunodeficiency diseases, Acquired immune deficiency syndrome	11
14	Allergy and Hypersensitivity , Effector mechanisms in allergic reactions and IgE, Hypersensitivity diseases	12
15	Autoimmunity and Transplantation , Autoimmune responses are directed against self antigens, Responses to alloantigens and transplant rejection, Self-tolerance and its loss	13
16	Manipulation of the Immune Response , Extrinsic regulation of unwanted immune responses, Using the immune response to fight infections and attack tumors	14

Additional Notes	
Assignments	Reading material, Flow cytometry, Watching immunobiology animations
Exams	Quizzes: 2-4 quizzes throughout the semester
Cheating	Will not be allowed or tolerated
Attendance	Is mandatory. Students with more than 10% of class time absences will be dismissed from the class.
Workload	
Graded Exams	3 exams, 40-50 questions in each exam, multiple choice, matching type, filling blanks, identifying molecules or mechanisms
Participation	Strongly encouraged, and will be calculated into the 10% of assignment part
Laboratory	Separate material and grading system
Projects	No projects assigned or required.