

## BIOL 4550: Immunology (Spring Semester 2011)

### 1. Course Information

- Course number and section: BIOL 4550 (A)
- Course name: Immunology
- Hours of credit: 4
- Pre-requisites or co-requisites as listed in university catalogue: BIOL 2230; BIOL 2270; BIOL 3100.
- Classroom location and room number: BC 1024 (for the lecture, 10:00 am - 10:50 am, MWF), BC 2071 (for the lab, 12:00-2:50 pm, W)
- Department, College, University: Department of Biology, College of Arts and Sciences, Valdosta State University

### 2. Instructor Information

- Instructor name: Dr. Jonghoon Kang
- Instructor contact: BC 2084, 229-333-7140, [jkang@valdosta.edu](mailto:jkang@valdosta.edu)
- Instructor office hours: MTW 8:30 am – 9:30 am

### 3. Course Description

- Introduction to basic concepts of immunology, including antigen and antibody structure, the generation of diversity, the nature of T cell and B cell receptors, cellular cooperation, and the down regulation of immune responses.
- Required texts, resources, and materials: “How the Immune System Works” by Lauren M. Sompayrac from Wiley-Blackwell; 3 edition (2008)
- Required out-of-class activities: Reading assigned lecture notes, presentation materials, and textbook. Performing assigned projects.

### 4. Standards, Goals, Objectives, or Outcomes

- outcomes:

The General Education Outcomes

(<http://www.valdosta.edu/academic/VSUGeneralEducationOutcomes.shtml>).

5. Students will demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices. They will understand the basic concepts and principles underlying scientific methodology and be able to collect, analyze, and interpret data. They will learn a body of scientific knowledge and be able to judge the merits of arguments about scientific issues. They will be able to perform basic algebraic manipulations and to use fundamental algebraic concepts to solve word problems and equations. They will be able to use basic knowledge of statistics to interpret and to analyze data. They will be able to evaluate arguments based on quantitative data.

7. Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written and visual materials. They will be skilled in inquiry, logical reasoning, and critical analysis.

They will be able to acquire and evaluate relevant information, analyze arguments, synthesize facts and information, and offer logical arguments leading to creative solutions to problems.

The departmental educational outcomes (listed in the university catalogue).

1. Develop and test hypotheses, collect and analyze data, and present the results and conclusions in both written and oral formats used in peer-reviewed journals and at scientific meetings.
3. Demonstrate an understanding of the cellular basis of life.
4. Relate the structure and the function of DNA/RNA to the development of form and function of the organism and to heredity.

- Course objectives or outcomes:

- Describe basic terminology in immunology.
- Describe the underlying physical and chemical principles in immunology.
- Demonstrate an understanding of basic experimental and computational techniques in immunology.
- Demonstrate literature analysis capability.
- Interpret clinical cases using basic principles of immunology.
- Demonstrate competency for the immunology part in standard tests such as MFT, GRE, and MCAT.

5. Assignments (explicitly aligned with the goals, objectives, or outcomes)

- General description of the assignments: Students are required to read the textbook to be covered before coming to the class. Some additional materials will be posted on the Blazeview and you need to study them before class. There will be five in-class tests and one final test.
- Policies for missed assignments, make-up assignments, late assignments, and/or extra credit: If you miss any assignment due to medical or family-related emergency you can have make-up assignments as long as you prove the valid reason of your absence (doctor's notes). **Otherwise no make-up tests!** And you will get a zero point for the missing part.

6. Assessment or Evaluation Policy

- Explanation of how much each assignment contributes to the overall grade for the class:

$$\text{Total Score} = 500 (\text{In Class Exam}) + 200 (\text{Final}) + 200 (\text{Lab}) = 900$$

- Explanation of how grades are assigned:

Total score (%)	Grade
$\geq 90\%$	A
$\geq 80\%$	B
$\geq 70\%$	C
$\geq 60\%$	D
$< 60\%$	F

7. Schedule of Activities or Assignments, including university -scheduled final exam time (all schedule is tentative and may be subject to change)

<b>Date</b>	<b>Lecture (MWF 10-10:50AM)</b>	<b>Date</b>	<b>Lab (W 12-2:50PM)</b>
1/10	Introduction	1/12	No lab
1/12 - 1/14	Overview		
1/17	No Class (MLK day)	1/19	Bioinformatics of CD Proteins Project (Data collection): Computer Lab 3018. <b>Project due on 1/26 (20 points)</b>
1/19 - 1/21	Overview		
1/24 - 1/31	Innate Immune System		
2/2	<b>Test 1 (100 points)</b>	1/26	Bioinformatics of CD Proteins Project (Data analysis): Computer Lab 3018
2/4 - 2/9	B cells and Antibodies	2/2	Thermodynamic Calculation: Computer Lab 3018, <b>Test (10 points)</b>
2/11- 2/16	Antigen Presentation		
2/18	Catch-up	2/9	Computational Tools for Innate Immunity (CytoPred, AntiBP): Computer Lab 3018, <b>due on 2/23 (40 points)</b>
2/21	<b>Test 2 (100 points)</b>	2/16	Student Own Research
2/23 - 3/2	T Cells and Cytokines	2/23	Introduction to ELISA reactions
3/4 - 3/9	Lymphoid Organs and Lymphocytes	3/2	Quantitative ELISA Laboratory Activity
3/11	<b>Test 3 (100 points)</b>	3/9	Vaccination Readiness
3/14 - 3/18	No Class (Spring break)	3/16	No Lab (Spring break)
3/21	Turning Off the Immune System	3/23	Electrophoresis-Based Detection of Bacteria-DNA Interaction
3/23 - 3/28	Tolerance Induction	3/30	Immuno-electrophoresis
3/30 -4/1	Immunological Memory and Vaccines	4/6	Antigen-Antibody Interaction: The Ouchterlony Procedure
4/4	<b>Test 4 (100 points)</b>	4/13	Radial Immunodiffusion
4/6 - 4/11	Immunopathology	4/20	Spectroscopic Identification of Tyrosine-Chemicals Interaction
4/13- 4/18	Cancer and Immune System		
4/20	Critique	4/27	<b>Lab Test (130 points)</b>
4/22	<b>Test 5 (100 points)</b>		
4/25 - 4/29	Presentation		
5/2	Review		
5/6	<b>Final Test (8-10 AM) (200 points)</b>		

## 8. Classroom Policies

- Attendance and tardiness: Any absence policy should conform to the university policy. University Attendance Policy from the VSU catalogue:  
“The University expects that all students shall regularly attend all scheduled class meetings held for instruction or examination. When students are to be absent from class, they should immediately contact the instructor. **A student who misses more than 20% of the scheduled classes of a course will be subject to receive a failing grade in the course.**”
- Accommodations Statement:  
From VSU’s Access Office (<http://www.valdosta.edu/access/facresources.shtml>):  
“Students requesting classroom accommodations or modifications due to a documented disability must contact the Access Office for Students with Disabilities located in Farber Hall. The phone numbers are 245-2498 (V/VP) and 219-1348 (TTY). “
- Academic Integrity: You know that cheating is a bad thing to do. Students caught cheating will receive a grade of F for the test in question and will be reported to the Dean of Students. You are expected to follow VSU’s Academic Integrity Code.  
From VSU’s Academic Integrity Code (the full code is available at <http://www.valdosta.edu/academic/AcademicHonestyPoliciesandProcedures.shtml> :  
“Academic integrity is the responsibility of all VSU faculty and students. Faculty members should promote academic integrity by including clear instruction on the components of academic integrity and clearly defining the penalties for cheating and plagiarism in their course syllabi. Students are responsible for knowing and abiding by the Academic Integrity Policy as set forth in the Student Code of Conduct and the faculty members’ syllabi. All students are expected to do their own work and to uphold a high standard of academic ethics. “
- Classroom demeanor or conduct: Every student should make the lecture a comfortable and enjoyable learning experience. Late entry to the class room or leaving early is bad behavior. Common sense should be practiced and expected.
- Communication: All VSU-related correspondence should be conducted via VSU email addresses for both student and instructor and via the Blazeview.

## 9. Additional Information (at instructor’s discretion)

- Expectations for competencies such as writing, technology skills, or performance: Students should be able to describe biological phenomena at the molecular or cellular level in terms of physics and chemistry.
- Instructional philosophy: I believe reading one book ten times is better than reading ten books one time each. This is the case for this course. Students are encouraged to practice all the exercise and examples in the textbook ten times.
- Strategies used to support learning: Students should take advantage of my office hours. Studying as a group (study group) should be a good idea.