BIOL 6550: Immunology (Fall, 2014)

1. Course Information

- Course number and section: BIOL 6550 (A) (CRN #: 81809)
- Course name: Immunology
- Hours of credit: 4
- Pre-requisites or co-requisites as listed in university catalogue: Admission into the graduate program or permission of the instructor.
- Classroom location and room number:
  Lecture: BC 2202, T & R 8:00 am – 9:15 am
  Lab: BC 2071, R 12:30 pm – 3:20 pm
- Department, College, University: Department of Biology, College of Arts and Sciences, Valdosta State University

2. Instructor Information

- Instructor name: Dr. Jonghoon Kang
- Instructor contact: #2217 (BSC). 229-333-7140, jkang@valdosta.edu
- Instructor office hours: T,R 9:30 am – 11:00 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; 4th edition (2012)
- 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/pers/gened.shtml).
3. Students will use information and computer computer and information technology when appropriate.
5. Students will demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices.
7. Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written, and visual materials.

The departmental educational outcomes (listed in the university catalogue).
1. To demonstrate competency in factual content and interpretation of the major biological concept areas of cell and molecular biology, genetics, organismal biology, and evolution and ecology.
2. To demonstrate the ability to identify significant biological research questions, develop research protocols, and properly analyze research questions through the use of the scientific method.
3. To produce a systematic and thoroughly researched thesis suitable for publication and appropriate to the thesis sub-discipline.

- 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, MCAT, and DAT.

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 four 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:

Total Score = 400 (In Class Exam) + 100 (Two Lab Practical) + 25 (Experiments) +15 (Two Assignments) + Presentation (100 points) + Final (200) = 840

- Explanation of how grades are assigned:

Total score (%)	Grade
>= 90%	A
>= 80%	B
>= 70%	C
>= 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)

Date	Class	Lab
8/19	1, An Overview	
8/21	1, An Overview	No Lab
8/26	1, An Overview	
8/28	1, An Overview 2, The Innate Immune System	Introduction to Immunology Research Assignment 1 discussion **BC 2071**
9/2	2, The Innate Immune System	
9/4	2, The Innate Immune System	Computational Tools for Innate Immunity (PRRDB, AntiBP): **Computer Lab 3018** Assignment 2 due **(5 points)**
9/9	**Exam I (100 points)**	
9/11	3, B Cells and Antibodies	Bioinformatics of CD Proteins Project (Protein structure, Membrane Proteins, Data collection): **Computer Lab 3018**
9/16	3, B Cells and Antibodies	
9/18	3, B Cells and Antibodies 4, The Magic of Antigen Presentation	Thermodynamic Calculation of Immune Reactions: **Computer Lab 3018**
9/23	4, The Magic of Antigen Presentation	
9/25	4, The Magic of Antigen Presentation	Paper discussion, Assignment 2 discussion **BC 2071**
9/30	**Exam II (100 points)**	
10/2 (mid-term)	5, T Cell Activation	**Lab Practical: Computer Lab 3018 (50 points)**
10/7	5, T Cell Activation 6, T Cells at Work	
10/9	6, T Cells at Work	Quantitative ELISA Laboratory Activity **(R1: 5 points)** Assignment 2 due **(10 points) BC 2071**
10/14	6, T Cells at Work	
10/16	7, Secondary Lymphoid Organs	Antigen-Antibody Interaction: The Ouchterlony Procedure **(R2: 5 points)** **BC 2071**
10/21	7, Secondary Lymphoid Organs	
10/23	**Exam III (100 points)**	Affinity Chromatography of Glucose Binding Proteins **(R3: 5 points) BC 2071**
10/28	8, Restraining the Immune System	

10/30	9, Tolerance Induction and MHC Restriction	Vaccination Readiness **(R4: 5 points) BC 2071**
11/4	9, Tolerance Induction and MHC Restriction	
11/6	10, Immunological Memory	Simulation of HIV detection by ELISA **(R5: 5 points) BC 2071**
11/11	11, Vaccines	
11/13	**Exam IV (100 points)**	Graduate student presentation **(100 point) BC 2071**
11/17	12, The Immune System Gone Wrong	
11/20	12, The Immune System Gone Wrong	**Lab Exam (50 points) BC 2071**
12/2	13, Immunodeficiency	
12/4	14, Cancer and the Immune System 15, A Critique of the Immune System	Review for Final **BC 2071**
12/10	**Final Exam (10:15 am - 12:15pm) (200 points)**	

Computational Tools for Innate Immunity
http://hgm2008.hgu.mrc.ac.uk/Abstracts/Publish/WorkshopPosters/WorkshopPosters01/hgm025.html

E1	E2	E3	E4	R1	R2	R3	R4	R5	A1	A2	P	LP1	LP2	Final	Course
100	100	100	100	5	5	5	5	5	5	10	100	50	50	200	100*SUM/840

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.***"
- Lab Conduct: Arrive on time. Students who miss two labs without an excuse or three labs total cannot receive a lab grade above a "D" (60%). So, do not be late to lab. In the event that a student misses a lab with an excuse, s/he should email the instructor within 24 hours of the missed lab. It is the instructor's prerogative to accept the excuse or not. Absolutely no laboratories can be made up, and no work will be accepted late.

- 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.
- Strategies used to support learning: Students should take advantage of my office hours. Studying as a group (study group) should be a good idea.
- I will teach and you will learn in this course. Therefore, your intellectual enhancement from this course will depend on both of us. Would you have any other ideas?