

**MBMB/MICR453- IMMUNOLOGY LECTURE  
SPRING 2017**

Room 1059, LSIII Monday, Wednesday, Friday 10:00 a.m - 10:50 a.m.

**Learning objectives:** At the completion of this course students are expected to understand how immune cells detect the presence of pathogens (or cancer cells); mechanisms by which innate and adaptive immune responses protect the host from a variety of pathogens (viruses, bacteria, parasites). Students need to have a solid understanding of: 1) Capture and elimination of pathogens by immune cells (e.g. opsonization, phagocytosis, neutralization, complement activation, cell-mediated cytotoxicity); 2) Structure and functions of key cells and molecules that mediate immune responses: antibodies, antigen receptors, MHC proteins, cytokines, chemokines; 3) Vaccines, Autoimmune diseases, allergies, immune tolerance and transplantation; 4) Experimental approaches in immunology: flow cytometry, monoclonal antibodies, immunofluorescence, knockout and transgenic mice, adoptive transfer of immune cells and imaging.

**Instructor**

Dr. Vjollca Konjufca, LSII, Room 126 (Lab. 127)  
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**Office hours**

**Monday 11:00 a.m. - 2 p.m.**

If you cannot make it to the office hours, please make an appointment via e-mail. Students located in Springfield can communicate with me via **SKYPE**. Students that do not have access to a personal computer, please make arrangements with Theresa Casson to use a departmental computer. My Skype name is **vjollcakonjufca**.

**Required textbook**

**Janeway's Immunobiology. 9th edition.** Murphy, K., Travers, P., and Walport, M. Garland Publishing Inc., 2017.

**Lectures and Attendance**

Each lecture will focus on specific aspects of immune cells and functions as listed in the course outline. Students are encouraged to participate by asking questions or commenting on the material covered in class. Regular attendance is expected and required.

**Exams and grading**

Exam 1 100 points (25%) February 10  
Exam 2 100 points (25%) March 10  
Exam 3 100 points (25%) April 7  
Final exam 100 points (25%) May 10  
**Total 400 points (100%)**

**Wednesday, May 10 10:15 a.m. - 12:15 p.m. FINAL EXAM**

## **Exams**

Exams will cover the material given in lectures. This material **MUST** be supplemented with assigned reading from the textbook. All exams have assigned dates and times. **No changes to the final exam schedule will be made.**

## **Grading scale**

90-100% 360-400 / 400 points A

80-89% 320-359 / 400 points B

70-79% 280-319 / 400 points C

60-69% 240-279 / 400 points D

0-59% 0-239 / 400 points F

## **Academic Integrity: plagiarism and cheating**

Any form of plagiarism or cheating is unacceptable. Plagiarism and cheating are offenses against the integrity of the courses in which they occur and against the college community as a whole. All members of the university community (faculty, staff, and students) share the responsibility and authority to challenge and make known to the appropriate authority acts of apparent academic dishonesty. Violation of the guidelines of academic integrity put forth by the University will result in failing grade for the work and/or course, and possible disciplinary probation.

**<http://policies.siu.edu/documents/StudentConductCodeFINALMay32011.pdf>**

## **Lecture topics:**

1. Introduction to immunology: basic concepts
2. Principles of innate and adaptive immunity
3. Recognition of microbes by the innate immune system and effector functions of the innate immunity
4. The Complement
5. The structure and function of immunoglobulins (antibodies)
6. The structure and functions of T cell receptors and MHC
7. Primary immunoglobulin gene rearrangement
8. T cell receptor gene rearrangement
9. Secondary diversification of antibody repertoire
10. Antigen processing and presentation to T cells (I)
11. Antigen processing and presentation to T cells (II)
12. The major histocompatibility complex and its functions
13. Signal transduction and propagation in immune cells
14. Lymphocyte activation via antigen receptor signaling
15. B cell development
16. T cell development in the thymus
17. Positive and negative selection of T cells
18. Survival and maturation of lymphocytes in peripheral lymphoid tissues
19. T cell-mediated immunity
20. Priming and activation of T cells
21. Properties of effector T cells and their cytokines
22. T cell-mediated cytotoxicity
23. B cell activation, proliferation and differentiation
24. The distribution and functions of immunoglobulin classes

25. Fc receptor-mediated pathogen destruction
26. Dynamics of adaptive immunity
27. Immunological memory
28. The organization of mucosal immune system
29. Regulation of mucosal immune responses to pathogens
30. Failure of host defense mechanisms
31. Immunodeficiency diseases
32. Allergy and allergic diseases
33. Effector mechanisms of IgE-mediated allergic reactions
34. Autoimmunity and self-tolerance
35. Genetic and environmental basis of autoimmunity
36. Manipulation of immune responses
37. Detection of immunity in vivo
38. Review of the material