

Immunology: MB 416/516

Credits: 3. Class meets 3 hours per week, MWF at 10:00 am-10:50 am in Pharmacy 305

Instructor:

Dr. Malcolm Lowry
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Office Hours: Friday 11am – 12 pm. or by appointment. Please email or call for an appointment if you cannot make regular office hours. On days in which the MB417 laboratory class meets on Friday, the hours will be after the lab is done, usually around 3-4pm.

Learning resources: Textbook is required.

Immunobiology, 9th edition. By Kenneth Murphy. 8th Edition is ok to use. Text is available at the OSU bookstore. It can also be rented online from various sources.

All powerpoint files and papers from class will be available on Canvas.

Academic Expectations statement:

This class will equip the student with skills to analyze and understand the immune response. Students will learn the basic function of the immune system, and how the immune system interacts with foreign pathogens and self. This class will also focus on current topics in immunology that continue to be exciting areas of research which have applications in all health-related fields.

Student Outcomes for the course:

1. Retain and demonstrate specialized terminology used to describe the immune system and immune responses.
2. Demonstrate knowledge of how the immune system functions in normal and disease states.
3. Synthesize research methods used in current journals with key concepts from class so that the student may judge the quality of conclusions reached based on scientific merit in journal articles from the field.
4. Graduate students will have in a separate section the requirement to communicate research findings from current journals in an oral presentation and engage in critical analysis of the concepts and techniques employed.

Evaluation of student performance:

There will be **2 Midterm exams and 1 Final exam**. There will also be random quizzes throughout the term to check up on your progress in the class. Look at the quizzes as a yardstick which can tell you if you need to focus more and seek some help, or whether you are doing fine. It is better to have incremental checks on your progress than to go into a big test blind and get an unwelcome surprise. Quizzes CAN'T be made up unless you are doing university business or athletic events, they are taken in class only. I will have one or two online homework assignments which will be in the form of case studies or treatment ideas of disease. Homework assignments will be weighted more than the quizzes, so don't worry if you miss a quiz.

Quizzes, participation, homework	10%
2 Midterm exams:	60%
1 Final exam:	30%

MB516 Graduate students: You will be doing a research paper presentation in the 516/699 section of class held only for graduate students. You will prepare a powerpoint presentation and present it to the class. The papers will be assigned by the Professor. The paper will be assigned a minimum of 1 week in advance of your presentation date. The graduate section normally meets at 5:00pm to 6:20pm on Thursday in Nash 404. Presentation of a paper is **required** for graduate students and is factored into the 10% category of participation.

Class concepts:

Immunology is a difficult area of biology in that it has many unique terms and language associated with it that make it challenging for the beginner to master. Once the terms are understood, then the overall concepts become clear. This is not a subject to "cruise" through, take the time to study material each week so you don't get overwhelmed. You will likely find that in fact immunology is an exciting area of research that is relevant to all sorts of health issues. As important supplemental material, I will assign research papers from immunology to accompany certain topics from the text. You will need to read and understand the major points of the papers since these will be covered by the exams. If you are having trouble understanding the material, please seek help. Email or come see me for advice and help. Since the class only has a curve based on the high score of each exam, which is usually close to 100, everyone can get an A if you put in the work. I would like you all to do very well, so if you need help don't be afraid to ask.

The precise topics in lecture are subject to change on the calendar. All slides from in class lectures will be posted on Canvas. All papers will also be posted as PDFs on Canvas.

Student conduct: (<http://studentlife.oregonstate.edu/studentconduct/offenses-0>)

The following information is summarized from the OSU Student Conduct Regulations. Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

- *cheating- use/attempted use of unauthorized materials, information or study aids
- *fabrication- falsification or invention of any information
- *assisting- helping another commit an act of academic dishonesty
- *tampering- altering or interfering with evaluation instruments and documents
- *plagiarism- representing the words or ideas of another person as one's own

When evidence of academic dishonesty comes to the instructor's attention, the instructor will document the incident, permit the accused student to provide an explanation, advise the student of possible penalties, and take action. The instructor may impose any academic penalty up to and including an "F" grade in the course after consulting with his/her department chair and informing the student of the action taken.

The goal of Oregon State University is to provide students with the knowledge, skill and wisdom they need to contribute to society. Our rules are formulated to guarantee each student's freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action Office.

Student Conduct Expectations link:

<http://studentlife.oregonstate.edu/code>

Statement Regarding Students with Disabilities: Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Reach Out for Success: University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)

Classroom policies: No cell phone usage or texting at any time in class. No Facebook or social media on laptops either. This is an upper level class, so really no need to go into why. If this policy is broken, creative punishments will be enforced. You don't want to be the focus of this creativity, so respect your fellow students time in class so all can learn effectively.

Class Schedule

9/25	Introduction to immunology.	
9/27	Cellular physiology of the immune system, immune functions.	Janeway pg 1-37
10/2	Innate Immunity	pg 37-49
10/4	Innate immunity	pg 49-73
10/7	Toll-like receptors	pg 77-107
10/9	Innate immunity continued	pg 101-114
10/11	Cellular adhesion, homing, coordinated responses	pg 111-132
10/14	Antigen recognition by B-cells and T-cells	pg 139- 168
10/16	Generation of diverse antigen receptors	pg 173-191
10/18	Antigen presentation to T-cells, MHC genes	pg 213-251
10/21	Immune receptor signaling pathways	pg 257- 282
10/23	Midterm Exam 1	
10/25	development of lymphocytes -B-cells	pg 295-314
10/28	development of T-cells	pg 315-338
10/30	T-cell responses	pg 345-382
11/1	T-cell responses continued	pg 345-393
11/4	Humoral immune response	pg 399-422
11/6	Mucosal immunity, T-regulatory cells	pg 425-472
11/8	Immunological memory	pg 473-487
11/11	Veterans Day Holiday-NO CLASS	

11/13	Vaccine development today	pg 729-743
11/15	Midterm Exam 2	
11/18	Allergic reactions	pg 601-627
11/20	Hypersensitivity reactions	pg 628-637
11/22	Autoimmunity	pg 643-682
11/25	Self-tolerance	pg 643-682
11/27	Transplantation and rejection	pg 683-695
11/29	Thanksgiving Holiday: NO CLASS	
12/2	Tumor immunology	pg 716-728
12/4	current topics- cancer immunotherapy	papers
12/6	current topics- cancer immunotherapy	papers
12/12	Final Exam 6pm-8pm	

Final Exam week: Dec 9 to Dec 13.

Immunology final exam: Dec 12th, Thursday. 6:00pm to 8:00pm. Pharmacy 305