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.

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 some 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:

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/attemtped 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.

University, College and Departmental Policies: For students with documented 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.

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

9/21 Introduction to immunology.

9/24 Cellular physiology of the immune system, immune functions. Janeway pg 1-37

9/26 Innate Immunity pg 37-49

9/28 Innate immunity pg 49-73

10/1 Toll-like receptors pg 77-107

10/3 Innate immunity continued pg 101-114

10/5 Cellular adhesion, homing, coordinated responses pg 111-132

10/8 Antigen recognition by B-cells and T-cells pg 139-168

10/10 Generation of diverse antigen receptors pg 173-191

10/12 Antigen presentation to T-cells, MHC genes pg 213-251

10/15 Immune receptor signaling pathways pg 257-282

10/17 Midterm Exam 1

10/19 development of lymphocytes -B-cells pg 295-314

10/22 development of T-cells pg 315-338

10/24 T-cell responses pg 345-382

10/26 T-cell responses continued pg 345-393

10/29 Humoral immune response pg 399-422

10/31 Mucosal immunity, T-regulatory cells pg 425-472

11/2 Immunological memory pg 473-487

11/5 Vaccine development today pg 729-743

11/7 Midterm Exam 2
11/9  Allergic reactions pg 601-627
11/12 Veterans day Holiday NO CLASS
11/14  Hypersensitivity reactions pg 628-637
11/16  Autoimmunity pg 643-682
11/19  Self-tolerance pg 643-682
11/21  Transplantation and rejection pg 683-695
11/23  Thanksgiving Holiday: NO CLASS
11/26  Tumor immunology pg 716-728
11/28  current topics- cancer immunotherapy papers
11/30  current topics- cancer immunotherapy papers
12/5  Wednesday Dec 5th, 2:00 pm -3:50 pm Final Exam

Final Exam week: Dec 3 to Dec 7.

Immunology final exam: Dec 5th, Wednesday Dec 5th, 2:00 pm -3:50 pm. Pharmacy 305