

# ***MICR 8210 Syllabus***

## **COURSE AND CONTACT INFORMATION**

Course: MICR 8210 “Infection and Immunity”

Semester: Spring 2020

Time: Mondays and Wednesdays, 10:15 – 11:45 am, except for Tuesday on 1/21  
(see attached schedule)

Location: Virtual via Blackboard Collaborate or Webex

### **Course Directors**

Name: David Leitenberg, M.D., Ph.D

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Office hours: directly following class or by appointment

Name: Mimi Ghosh, Ph.D

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Office hours: directly following class or by appointment

## **COURSE DESCRIPTION**

This is an introductory course that covers basic principles of the immune system, host defense to infectious disease and microbial pathogenesis. It is intended for Ph.D. students in the Institute for Biomedical Sciences (IBS), and M.S. students in the Public Health Microbiology and Emerging Infectious Disease program. Class sessions will be largely lecture format given by a GWU or guest faculty as well as sessions involving discussions of the primary literature.

## **LEARNING OUTCOMES:**

As a result of completing this course, students will be able to:

- Differentiate the role(s) and regulation of immune system cells and molecules in human health and disease.
- Compare how the immune system functions in response to infections by bacteria, fungi, viruses, and eukaryotic parasites.
- Distinguish the molecules and mechanisms used by microbes (bacteria, fungi, viruses, and eukaryotic parasites) to interact with the host and how these impact the pathogenesis of disease.
- Demonstrate enhanced critical thinking and problem-solving skills.

## **TEXTS**

None required.

Recommended to supplement session materials and as reference source:

“Cellular and Molecular Immunology”, Abbas, Lichtman, Pillai, 8<sup>th</sup> edition, Elsevier

Available on-line thru Himmelfarb e-book

<https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20130013230>

or  
“Janeway’s Immunobiology”, Murphy, 8<sup>th</sup> edition, Garland Science

## Microbiology

Cornelissen, Cynthia Nau, author.; Hobbs, Marcia Metzgar, author.

2020

<https://meded.lwwhealthlibrary.com/book.aspx?bookid=2605>

or  
“Microbiology, An Introduction”, Tortora, Funke, Case, 11<sup>th</sup> edition, Benjamin Cummings

Review papers relevant to the class sessions will also be provided on blackboard.

### 2021 Lecture Schedule (all classes sessions are 10:15-11:45 am)

M January 11	Introduction to the Immune System and the Inflammatory Response	Leitenberg
W January 13	Innate Immune Response	Leitenberg
M January 18	MLK Birthday – NO CLASS	
TBD	Antigen Recognition, Processing and Presentation	Leitenberg
M January 25	Lymphocyte Development	Leitenberg
W January 27	Lymphocyte activation and signal transduction	Bosque
M February 1	T Cell Effector Function 1	Leitenberg
W February 3	T Cell Effector Function 2 (half session) B cells and Humoral Immunity (half session)	Leitenberg Lynch
M February 8	B cells and Humoral Immunity	Lynch
W February 10	Immune Tolerance, Regulatory Mechanisms	Leitenberg
M February 15	President’s Day-NO CLASS	
W February 17	Immunological Memory and Biology of Vaccines	Leitenberg
M February 22	Hypersensitivity and Autoimmunity	Leitenberg
W February 24	Paper Discussion; TBD	Leitenberg/Ghosh
M March 1	Review Immunology Section	Leitenberg
W March 3	<b>Exam 1</b>	
M March 8	Bacterial classification and Pathogenesis 1	Hovel-Miner
W March 10	Bacterial Pathogenesis 2	Hovel-Miner
March 16-20	Spring Break NO CLASS	

M March 22	Bacterial Pathogenesis 3: Mycobacteria	Firmani
W March 24	Viral Classification and Intro Pathogenesis	Bosque
M March 29	Viral Pathogenesis 2: Latent Viruses: Herpes, HIV	Bosque
W March 31	Viral Pathogenesis 3: Acute viruses: Influenza, SARS CoV2 and Hemorrhagic Fever	Ghosh
M April 5	Viral Pathogenesis 4: Chronic viruses: Hepatitis B and C	Siegel
W April 7	Biology & Pathogenesis of Yeast & Fungi	Ghosh
M April 12	Biology of parasitism	Hawdon
W April 14	Biology and Pathogenesis of Protozoa 1 (Toxoplasma, Malaria)	Kumar/Hovel-Miner
M April 19	Biology and Pathogenesis of Protozoa 2 (Kinetoplastids)	Hovel-Miner
W April 21	Biology and Pathogenesis of Nematodes	Brindley
M April 26	Biology and Pathogenesis of Flatworms	Brindley
W April 28	Paper Discussion; Host Pathogen Interaction	Ghosh/Leitenberg
M May 3	Review Infection Section	Ghosh
W May 5	<b>Exam 2</b>	

### Course Requirements and Assessments

#### EXAMS\*:

Immunology and Inflammation Exam*	35%
Microbiology and Infectious Disease Exam*	35%

\*Exams may include combination of short answers, matching and multiple choice/multiple answer

**Manuscript writing (take home)** 20%

You will be provided with Figures and Methods sections from a published article. From these, you will synthesize an Abstract, Results, and a short Discussion section written in the format of a PubMed journal article. More details will be provided during class.

**Paper Discussions** 2x5%

Two sessions will discuss recent scientific articles selected by the instructor (total of 10% of your grade). Articles MUST be read before class. Instructor will create a power point presentation containing relevant sections/figures from the article. Students are expected to participate in the discussion as the slides are presented. Specifically, students should be able to identify the rationale for the study, hypothesis, describe the methods, and interpret the data. A brief (1 page maximum) summary of the paper (1.5 spacing, size 11 font) will be due from each individual the following week.

### CLASS POLICIES

- Attendance is **strongly encouraged** at all classes and is **required** for sessions that involve a paper discussion unless a written request has been submitted and approved ahead of time by the course director.
- All religious holidays that require an absence from class will be honored, although students should notify the course director of their absence.
- It will be the student's responsibility to make up any missed classes by copying notes from a classmate or downloading lecture notes from Blackboard.
- Students who turn in papers and/or exams late will be penalized, unless written permission is obtained from the course director.

## **University policies:**

### **University policy on observance of religious holidays**

In accordance with University policy, students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. For details and policy, see: [students.gwu.edu/accommodations-religious-holidays](http://students.gwu.edu/accommodations-religious-holidays).

### **Academic integrity code**

Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. For details and complete code, see: [studentconduct.gwu.edu/code-academic-integrity](http://studentconduct.gwu.edu/code-academic-integrity)

### **Safety and security**

In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.

### **Support for students outside the classroom**

#### **Disability Support Services (DSS)**

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information see: [disabilitysupport.gwu.edu/](http://disabilitysupport.gwu.edu/)

#### **Mental Health Services 202-994-5300**

The University's Mental Health Services offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health

consultations confidential assessment, counseling services (individual and small group), and referrals. For additional information see: [counselingcenter.gwu.edu/](http://counselingcenter.gwu.edu/)