

BIOL 432 IMMUNOLOGY

Spring 2020

Dr. Diana Mitchell

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Office: Life Sciences South (LSS) 150

Office Hours: Thursdays 1:15-2:30 pm, or by appointment

Class Meets:

Monday, Wednesday, Friday 10:30-11:20 am

Renfrew Hall 125 (REN 125)

Learning Objectives:

In accordance with *UI Learning Outcomes*, it is expected that students will:

Learn & Integrate: Students will apply their previous knowledge of cellular & molecular biology and biochemistry to gain an understanding of the development, function, and regulation of the immune system.

Think & Create: Students will be expected to apply the concepts and approaches learned in this course to solve future academic and professional problems.

Communicate: Students will be expected to effectively communicate the concepts learned in this course using the terminology and vocabulary of biology, chemistry, and immunology.

Clarify Purpose & Perspective: It is expected that all students will gain insight into how the immune system protects against infectious disease and additionally, understand the immune system's contribution to disease. Further, students will understand how a mechanistic knowledge of immunology leads to effective vaccine and drug development.

Practice Citizenship: It is expected that students will be able to share their knowledge of immunology with others in a manner that provides accurate information about concepts that impact all of society, including immune response to microbial infection, vaccination, immune-mediated diseases, and immunotherapeutics.

Required Text: Kuby Immunology, 8th Edition (Pundt, Stranford, Jones, Owen)
Hard copy or e-book format (student choice)
Library has reserve copy for 3 hour checkout (In-library use)

Course Organization

Course Structure: Modules with corresponding topics.

- I. Elements and Concepts of Immunology
- II. Initiation of Innate Immune Response and Inflammation
- III. Adaptive Immunity: Generation of Diversity and Lymphocyte Development
- IV. Adaptive Immunity: Activation, Effector Functions, Memory
- V. Applied & Clinical Immunology in Health & Disease

Proposed Course Schedule (see next page):

Proposed Course Schedule (topics subject to change, exam dates will *not* change):

Day	Date	Module	Topic(s)	Text Chapters
W	Jan 15	I-Elements & Concepts in Immunology	Intro to course, pathogenic microbes, barriers	1, 4 (p. 116-120)
F	Jan 17		Arms of immunity, cells/organs of immune system	1, 2, Appendix I
M	Jan 20		Martin Luther King/Human Right's Day—No Class	
W	Jan 22		CD antigens, visualizing immune cells	2, 20 (Flow cytometry), Appendix I
F	Jan 24		Self vs. Non-self recognition, receptor-ligand interactions, cell-cell communication	2, 3
M	Jan 27	II-Initiation of Innate Immune Response & Inflammation	Anticipation of infection, triggers of immune response and inflammation	4, 5
W	Jan 29		Innate Immunity: Cellular	4
F	Jan 31		Innate Immunity: Cellular	4
M	Feb 3		Innate Immunity: Complement	5
W	Feb 5		Innate Immunity: Complement	5
F	Feb 7		Problem Set 1	
M	Feb 10	EXAM 1	Modules I & II	
W	Feb 12	III-Adaptive Immunity: Generation of Diversity and Lymphocyte Development	T and B cells: Antigen specificity and recognition	3, 7 (p. 249-255)
F	Feb 14		Generation of T and B cell diversity	6
M	Feb 17		President's Day—No Class	
W	Feb 19		Generation of T and B cell diversity	6
F	Feb 21		Generation of T and B cell diversity	6
M	Feb 24		MHC and antigen presentation	7
W	Feb 26		T cell development	8
F	Feb 28		T cell development	8
M	Mar 2		B cell development	9
W	Mar 4		B cell development	9
F	Mar 6		Problem Set 2	
M	Mar 9	EXAM 2	Module III	
W	Mar 11	IV-Adaptive Immunity: Activation, Effector Functions, Immunological Memory	T cell activation & effector differentiation	10
F	Mar 13		T cell activation & effector differentiation	10
M	Mar 16		Spring Break	
W	Mar 18		Spring Break	
F	Mar 20		Spring Break	
M	Mar 23		B cell activation & effector differentiation	11
W	Mar 25		Effector responses of adaptive immunity	12
F	Mar 27		Effector responses of adaptive immunity	12
M	Mar 30		Adaptive immunity in space and time	14
W	Apr 1		Adaptive immunity in space and time	14
F	Apr 3		Problem Set 3	
M	Apr 6	EXAM 3	Module IV	
W	Apr 8	V-Applied & Clinical Immunology	Barrier immunity	13
F	Apr 10		Barrier immunity	13
M	Apr 13		Vaccination	17

W	Apr 15	in Health & Disease	Vaccination	17	
F	Apr 17		Allergy, Hypersensitivity, Chronic Inflammation	15	
M	Apr 20		Allergy, Hypersensitivity, Chronic Inflammation	15	
W	Apr 22		Tolerance & Autoimmunity	16	
F	Apr 24		Autoimmunity/ Transplantation	16	
M	Apr 27		Immunodeficiency	18	
W	Apr 29		Monoclonal antibodies as drugs		
F	May 1		Problem Set 4		
M	May 4		Cancer & the immune system (Guest Instructor)	19	
W	May 6		Cancer & the immune system (Guest Instructor)	19	
F	May 8			Self-study	
W	May 13, 10:15am-12:15pm		EXAM 4	Module V	

Learning Activities and Assessment:

I. In-class Discussion Questions, Worksheets, and Review Problem Sets:

These learning activities allow for synthesis and application of didactic material. In-class Discussion Questions and Worksheets are integrated with the daily lectures/topics. Review Problem Sets are scheduled for the conclusion of Module(s) prior to each exam, and one class session is dedicated to work and discussion of these problem sets. These Problem Sets are designed to allow students to apply, integrate, and connect the course material, and to prepare students for exams. Students may work on these activities individually or in groups of their choice. Answers to Discussion Questions, Worksheets, and Review Problem Sets will not be posted; students are responsible for the intellectual effort to arrive at, and validate, their answers. These activities are not directly graded, but they do represent material that will be emphasized on exams.

For some of the in-class discussion Qs, we will try using Poll Everywhere software. Students should be able to connect and submit answers to discussion questions, which we will then review with the entire class.

Connection to Poll Everywhere (when polls are active):

WEB: PollEv.com/dianamitchel886

Phone (to use text messaging): Text DIANAMITCHEL886 to 37607

II. EXAMS (200 points total):

Exams are 50 points each, covering topics prior to those exams. *Exams are heavily influenced by Discussion Questions, Worksheets, and Review Problem Sets.*

Final Grades (200 points possible):

Grade	Percentage (Overall)
A	90-100%
B	80-89
C	70-79
D	60-69
F	59 or below

If you need to schedule a make-up exam for a **UI-approved excuse** (see general catalog, section M), contact Dr. Mitchell as soon as you know the exam will be missed. No extra credit assignments.

Academic Dishonesty:

Cheating or Plagiarism will result in an automatic zero for that exam or assignment. If a repeat incident occurs, the student(s) will receive a failing grade for the course. All parties involved in the act of cheating or plagiarism will be penalized and reported to Dean of Students. Cheating= acquisition of answers to exam questions or assigned materials in a dishonest manner. Plagiarism= the use of another person's writing as your own and/or use of writing from published sources (including internet), including copying or paraphrasing with slight change of wording.

Center for Disability Access and Resources:

The CDAR coordinates services to meet the educational needs of students with temporary or permanent disabilities. Students needing accommodations to fully participate in a class should contact CDAR as soon as possible. All accommodations must be approved through CDAR prior to being implemented. To learn more about the accommodation process, visit CDAR at the Bruce M. Pitman Center Room 127, website at www.uidaho.edu/cdar or call 208-885-6307.

Phone: 208-885-6307

Email: cdar@uidaho.edu

Website: www.uidaho.edu/current-students/cdar

University of Idaho Classroom Learning Civility Clause:

In any learning environment, it is essential that all members feel as free and safe as possible in their participation. To this end, it is expected that everyone in this course will be treated with mutual respect and civility, with an understanding that all of us (students, instructors, professors, guests, and teaching assistants) will be respectful and civil to one another in discussion, in action, in teaching, and in learning. If you feel our classroom interactions do not reflect an environment of civility and respect, you are encouraged to meet with Dr. Mitchell to discuss your concern. Additional resources for expression of concern or requesting support include the Dean of Students office and staff (5-6757), the UI Counseling & Testing Center services (5-6716), or the UI Office of Human Rights, Access, & Inclusion (5-4285).
