

BIOL 432 IMMUNOLOGY

Spring 2021

Dr. Diana Mitchell

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Office Hours: Thursdays 10:30-11:20 am, or by appointment. Office hours will be held in virtual format over Zoom using the same zoom link as below for class meetings.

Office (FYI): Life Sciences South (LSS) 150—no in person visits this semester.

Class Meets Virtually:

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

Zoom link and info:

Meeting ID 880 2463 3715

<https://uidaho.zoom.us/j/88024633715>

University of Idaho Authentication is required to join—you must be logged in to your UI account

There is a direct link to the Zoom meeting on the left hand menu in BbLearn

Important Points on Virtual Format:

The same Zoom link will be used for all class meetings as well as office hours/appointments. You will not be able to join the link until the meeting has been started. Please use proper etiquette while attending class virtually. This includes muting your microphone when you are not speaking, and appropriate use of the chat feature for questions, comments, etc. If you would like to ask a question verbally, please turn on your video if you are able to support it. Class will begin promptly at 10:30 am.

Course Materials:

Announcements, course syllabus, slide decks, assignments, exams, and grades will be posted to the **BbLearn page** for BIOL432 Spring 2021. Lectures will be recorded, and recordings will be posted to **Microsoft Stream** at the end of class (BIOL432 Immunology Spring 2021, #biol432).

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)

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.

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

Day	Date	Module	Topic(s)	Text Chapters
W	Jan 13	I-Elements & Concepts in Immunology	Intro to course, pathogenic microbes, barriers	1, 4 (p. 116-120)
F	Jan 15		Arms of immunity, cells/organs of immune system	1, 2, Appendix I
M	Jan 18		Martin Luther King/Human Right’s Day—No Class	
W	Jan 20		CD antigens, visualizing immune cells	2, 20 (Flow cytometry), Appendix I
F	Jan 22		Self vs. Non-self recognition, receptor-ligand interactions, cell-cell communication	2, 3
M	Jan 25	II-Initiation of Innate Immune Response & Inflammation	Anticipation of infection, triggers of immune response and inflammation	4, 5
W	Jan 27		Innate Immunity: Cellular	4
F	Jan 29		Innate Immunity: Cellular	4
M	Feb 1		Innate Immunity: Complement	5
W	Feb 3		Innate Immunity: Complement	5
F	Feb 5		Problem Set 1-Q&A	
M	Feb 8	EXAM 1	Modules I & II	
W	Feb 10	III-Adaptive Immunity: Generation of Diversity and Lymphocyte Development	T and B lymphocytes: Antigen specificity and recognition	3, 7 (p. 249-255)
F	Feb 12		Generation of T and B cell diversity	6
M	Feb 15		President’s Day—No Class	
W	Feb 17		Generation of T and B cell diversity	6
F	Feb 19		Generation of T and B cell diversity	6

M	Feb 22		MHC and antigen presentation	7
W	Feb 24		T cell development	8
F	Feb 26		T cell development	8
M	Mar 1		B cell development	9
W	Mar 3		B cell development	9
F	Mar 5		Problem Set 2-Q&A	
M	Mar 8	EXAM 2	Module III	
W	Mar 10	IV-Adaptive Immunity: Activation, Effector Functions, Immunological Memory	T cell activation & effector differentiation	10
F	Mar 12		T cell activation & effector differentiation	10
M	Mar 15		Spring Break	
W	Mar 17		Spring Break	
F	Mar 19		Spring Break	
M	Mar 22		B cell activation & effector differentiation	11
W	Mar 24		Effector responses of adaptive immunity	12
F	Mar 26		Effector responses of adaptive immunity	12
M	Mar 29		Adaptive immunity in space and time	14
W	Mar 31		Adaptive immunity in space and time	14
F	Apr 2	Problem Set 3-Q&A		
M	Apr 5	EXAM 3	Module IV	
W	Apr 7	V-Applied & Clinical Immunology in Health & Disease	Barrier and Mucosal immunity	13
F	Apr 9		Barrier and Mucosal immunity	13
M	Apr 12		Vaccination	17
W	Apr 14		Vaccination	17
F	Apr 16		Allergy, Hypersensitivity, Chronic Inflammation	15
M	Apr 19		Allergy, Hypersensitivity, Chronic Inflammation	15
W	Apr 21		Tolerance & Autoimmunity	16
F	Apr 23		Autoimmunity/ Transplantation	16
M	Apr 26		Immunodeficiency	18
W	Apr 28		Monoclonal antibodies as drugs	
F	Apr 30		Cancer & the immune system—Guest Lecturer	19
M	May 3		Cancer & the immune system—Guest Lecturer	19
W	May 5		TBD	
F	May 7	Problem Set 4-Q&A		
Th	May 13, 10:15-12:15	EXAM 4	Module V	

Learning Activities and Assessment:

I. In-class Discussion Questions, Worksheets:

These learning activities allow for synthesis and application of didactic material. In-class Discussion Questions and Worksheets are integrated with the daily lectures/topics. Answers to Discussion Questions and Worksheets will not be posted; students are responsible for the intellectual effort to arrive at, and validate, their answers. Although these activities are not directly graded, they do represent material that will be emphasized on exams. Discussion questions will be integrated into the lecture slide decks, and worksheets will be available on BbLearn for each Module.

II. Review Problem Sets (40 points total):

Review Problem Sets will be available for each of the Modules, and one class session (before the exam) is dedicated to Q&A/discussion of these problem sets. These Problem Sets are designed to allow students to apply, integrate, connect the course material, and achieve a deeper understanding of principles of immunology. Students may work on these activities individually or in (virtual) groups of their choice. Problem Sets will be available on BbLearn at least 5 days before the exam and are due at 11:59 pm the night before the subsequent exam. Problem sets are to be submitted in electronic format over BbLearn. **Each problem set is worth 10 points total and will be graded only for completion.** To receive credit for completion, each question must be sufficiently addressed and answered. *There is no partial credit.* Answers to problem sets will not be posted and these Q&A sessions will not be recorded; students are responsible for the intellectual effort to arrive at, and validate, their answers.

II. EXAMS (160 points total):

Exams will be administered remotely over BbLearn. You will have the dedicated 50 minutes of class time (10:30-11:20 am) to complete your exam and submit it through BbLearn. The exam file will be made available at 10:28 am, which will provide a couple of extra minutes to download and open the file. You must submit the exam via BbLearn by 11:25 am. Due to the nature of remote exams, you may use your resources to complete exams, but you are expected to complete your exam on your own. If your answer(s) match that of another student, your exam will be flagged and reviewed for possible academic dishonesty (see statement below).

Exams are 40 points each, covering topics prior to those exams. *Exams are heavily influenced by Discussion Questions, Worksheets, and Review Problem Sets.*

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.

III. Final Grades (200 points possible):

Final grades will be calculated by the total points earned for Problem Sets and Exams (4 problem sets worth 10 points each, 4 exams worth 40 points each) out of 200 total points. No extra credit assignments. Grades will be assigned as follows:

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

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).