IMMUNOLOGY BICD140

FALL 2020

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IMMUNOLOGY BICD140
FALL 2020

1) PROFESSOR AND INSTRUCTIONAL ASSISTANTS:

PROFESSOR: DR. ELINA ZUNIGA http://biology.ucsd.edu/research/faculty/eizuniga

INSTRUCTIONAL ASSISTANTS:

Name		Email Address
Zangwill, Dina Rose	Graduate Instructional Apprentice	dzangwil@ucsd.edu
Araujo Hoffmann, Filipe	Teaching Assistant	faraujoh@ucsd.edu
Yang, Letitia	Teaching Assistant	ley017@ucsd.edu

EMAIL COMMUNICATION (TO DR. ZUNIGA AND IAS): Please remember to include your first and last name in the body of the email and WRITE BICD140 IN E-MAIL SUBJECT (your e-mail may miss your email if you do not write that). We will not respond to any questions regarding the content of the exams by email or answer lengthy questions on course material or anything else that can be done in person before/after lectures, discussion sections or during office hours. We will address questions about the course material during office hours. Please talk to us during this time.

2) COURSE WEBSITE:

https://canvas.ucsd.edu

3) GOALS OF THE COURSE:

Immunology is the study of the physiological mechanisms that organisms use to defend their bodies from invasion by other organisms. The origins of the subject lie in the practice of medicine and in historical observations that people who survived the ravages of epidemic disease were untouched when faced with the same disease again—they had become immune to infection. Infectious diseases are caused by microorganisms, which have the advantage of reproducing and evolving much more rapidly than do their human hosts. During the course of an infection, the microorganism can pit enormous populations of its species against an individual. In response, the human body invests heavily in cells dedicated to defense, which collectively form the immune system. Parham 3rd Edition.

During this quarter, we will explore the complex biology of the many cell types that defend the human body from infectious agents with the final goal of

understanding how the immune system unites molecular, cellular, evolutionary and genetic principles to fight the war against pathogens.

Learning Immunology: Immunology is not a linear discipline. You have to bring together several concepts simultaneously in order to understand each aspect of immunity. As you read and review, you will find that you have to look up terms and definitions, and it is an interactive process. You learn subjects 1, 2, and 3, and then you can go back and understand subject 1 with more clarity. **You cannot learn immunology in one pass and you cannot learn it quickly before the exam.** Start studying from the first week, and do not fall behind.

4) PREREQUISITES:

BICD100 (Genetics) and BIMM100 (Molecular Biology), and their prerequisites. If a prerequisite has been waived to allow you to take this class, it is your personal responsibility to make up any deficiencies that you may have.

5) TEXT BOOK:

The Immune System, Garland publishing, Fourth Edition by Parham. The textbook is mandatory, there will be reading in it associated with every lecture. The lectures will make extensive use of the figures in the text, as well as other material. There are a limited number of texts on reserve at the Biomedical Library along with a somewhat more detailed book, Immunobiology -- by Charles Janeway, Jr. and Paul Travers. Immunobiology is available online (http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowTOC&rid=imm.TOC&depth=2).

6) LECTURES:

Note that all lectures will be delivered synchronously via Zoom and will be recorded. Lecture recordings will be available asynchronously to all students on the class website "Media Gallery" folder as soon as possible after each lecture. The time to upload lecture recording may vary depending on internet traffic.

Tuesdays and Thursdays 12:30PM-1:50 PM (US Pacific Time)

LOCATION: Zoom link in the Canvas course website in "Zoom LTI PRO" folder.

Lectures will provide much information not contained in the reading and cover the major concepts indicated on the schedule. Please note that the schedule and readings indicated below may be modified somewhat during the quarter, and any changes will be announced in lecture. While lecture slides will be posted on the class website before the class, these notes are **not** intended to replace lecture, and there will be material presented in class that does not appear in the lecture slides. You will be responsible for information provided in lecture in addition to

the material assigned in the text. The lecture slides will be posted on the website before the lecture. It is your responsibility to keep track of last minutes changes in the slides. Information available on the website will not be handed out in class.

Reading: Reading assignments are noted on the schedule below. Any additional reading will be announced in lecture and on the web site. **You are strongly encouraged to read text material *before* lectures and/or use the reading to clarify and deepen concepts that were covered in lectures.**

SCHEDULE FOR LECTURES & EXAMS AND READING MATERIAL

Lecture 1: 10/1. Overview of the Immune System. Adaptive vs. Innate Immunity. Read Chapter 1.

Lecture 2: 10/6. Innate Immunity. Read Chapter 2&3.

Lecture 3: 10/8. Innate Immunity cont. Read Chapter 2&3.

Lecture 4. 10/13. Adaptive Immunity. Read Chapter 4. **Where is the immune system?** Read Chapter 1 (1-11 to 1-14)

Lecture 5: 10/15. Antibodies: What are they, what do they do and how do they come to be? Read Chapter 4.

Lecture 6: 10/20. B cell development and rearrangement of antibody genes. Read Chapter 6.

***Lecture 7: 10/22.* B cell development and rearrangement of antibody genes cont.** Read Chapter 6.

Lecture 8: 10/27. ***EXAM# 1, including all material covered and reading material assigned for lectures 1-7. Via Canvas and protracted via Zoom with the same link used for lectures (see below guidelines for online exams)***

Lecture 9: 10/29. T cell recognition of antigen. Read Chapter 5.

Lecture 10: 11/3. T cell recognition of antigen cont. Read Chapter 5.

Lecture 11: 11/5. T cell development. Read Chapter 7.

Lecture 12: 11/10. T cell development cont. Read Chapter 7.

Lecture 13: 11/12. T cell activation. Read Chapter 8.

Lecture 14 11/17: T cell activation cont. Read Chapter 8.

Lecture 15: 11/19. EXAM #2, including all material covered and reading material assigned for lectures 9-14. Via Canvas and protracted via Zoom with the same link used for lectures (see below guidelines for online exams)

Lecture 16: 11/24. 11/14. B and T cell collaboration. Read Chapter 9.

11/26 Thanksgiving (UCSD Holiday)

Lecture 17: 12/1. B cell activation and antibody mediated immunity. Read Chapter 9.

Lecture 18: 12/3. Vaccines (by Dr. Susan Kaeck). Read Chapter 11&13.

https://www.salk.edu/scientist/susan-kaech/

Lecture 19: 12/8. Autoimmunity (by Dr. Ye Zheng). Read Chapter 14&16.

https://www.salk.edu/scientist/ye-zheng/

Lecture 20: 12/10. Hypersensitivity. Read Chapter 14.

FINAL EXAM: December 18th, 2020 at 11:30AM-2:29PM including all lecture and reading material assigned for the entire course with emphasis on material and reading assigned for lectures 15-20. Via Canvas and protracted via Zoom with the same link used for lectures (see below guidelines for online exams)

7) QUESTIONS VIA ZOOM POLL

To enrich your learning experience through class participation I will use zoom poll in lectures. This will allows you to respond to questions I pose during class.

Poll answers will not be graded but you are encourage to participate to enhance your learning experience

8) OFFICE HOURS: Office hours with will be held every week, beginning the week of October 5th (week corresponding to lectures #2 and#3).

OFFICE HOURS WITH DR ZUNIGA: Office hours with Dr. Zuniga will be held every Thursdays from 2:00 PM to 3:00 PM using the same Zoom link we use for lectures. I would be happy to talk with you about the class, Immunology in general, science and your studies. I am a wasted resource if you do not take advantage of my office hours!

OFFICE HOURS WITH IA:

	Day/Time	Location:
Zangwill, Dina Rose	Mondays 6-7PM PST	Zoom link will be posted by IAs in **"Zoom LTI PRO" folder**
Araujo Hoffmann, Filipe	Fridays 3-4PM PST	Zoom link will be posted by IAs in **"Zoom LTI PRO" folder**
Yang, Letitia	Fridays 4-5PM PST	Zoom link will be posted by IAs in **"Zoom LTI PRO" folder**

9) DISCUSSION SECTIONS:

Discussion sections will be held every week beginning after the first lecture (October 1st). Discussion sections will be held synchronously via Zoom. Note that each IA will lead two discussion sections and that IAs will provide a separate link for the Zoom meeting to the students enrolled in each section. Discussion sections are meant to have only a limited number of students so you should attend to the section that you are enrolled in.

SECTION		DAY & TIME	ZOMM LOCATION	IA
A01	DI W	4:00p-4:50p	IA will send Zoom link via email	Letitia*
A02	DI F	1:00p-1:50p	IA will send Zoom link via email	Dina*
A03	DI W	5:00p-5:50p	IA will send Zoom link via email	Letitia*
A04	DI F	2:00p-2:50p	IA will send Zoom link via email	Filipe*
A05	DI F	12:00p-12:50p	IA will send Zoom link via email	Dina*

A06 DI W 6:00p-6:50p IA will send Zoom link via email Filipe*

**The assigned IA for each discussion section will be indicated in "updated" syllabus that will be available in website after the first week of lecture.*

These sessions are a valuable part of this course, and attendance will count for 5% of your grade. To get the attendance credits you MUST attend the discussion section to which you are assigned.

I highly recommend that you take part in them. These sections serve to clarify, emphasize and expand points that have been introduced in lecture. The section leaders craft each meeting to include special topics and problem solving. PDF with material (slides, problem sets, etc) for the discussion sections will be posted on the website.

Special Topics: There are three discussion sections touching Special Topics, which are scheduled as follows:

Week corresponding to lectures #8: Flow Cytometry

Week corresponding to lectures #14: Transgenic mice

Week corresponding to lectures #18: Antibodies: measurement, characterization and applications.

Problem Solving: In addition to problems given at the end of the chapter, three problem sets will be assigned. You are encouraged to work these problems before section and to be prepared to discuss the answers during section. The answers will be provided and discussed during discussion sections but will NOT be posted.

TENTATIVE SCHEDULE FOR DISCUSSION SECTIONS (Note that weeks before Thanksgiving are counted from Thursday to Thursday)

-Normal discussion section on Veterans day

-No discussion section on Thursday and Friday of Thanksgiving week (Note that Thursday and Friday are, until Thanksgiving week, advanced respect to other sections)

-Discussion sections on Monday, Tuesday and Wednesday of Thanksgiving week are during normal hours

Week after lecture #1: Syllabus/ discuss this short perspective
"Escaping Pandora's Box — Another Novel Coronavirus"
Morens, et al. NEJM 2020
https://www.nejm.org/doi/full/10.1056/nejmp2002106

Week after lecture #3: Paharm Book: questions 1-2, 1-3, 1-4, 2-1, 2-7, 2-10, 3-1, 3-8, **3-11**, **3-12,** 3-13
(Bold questions will only be covered if time permits)

Week after lecture #5: Problem set #1 (except question #13-15)

Week after lecture #7: Flow Cytometry and Problem set #1 questions #13-15

Week after lecture # 9: Review Midterm #1

Week after lecture # 11: Problem Set #2

Week after lecture #13: Transgenic mice

Week after lecture #15: Review Midterm #2

11/26 Thanksgiving (UCSD Holiday)

Week of lecture #17&19: Antibodies: measurement, characterization and applications.

Week of lecture #19&20: Problem Set #3

10) OPTIONAL SEMINARS:

Information about *advanced seminars* by renowned immunologists is available at:

https://labs.biology.ucsd.edu/zuniga/global_immunotalks.htm

Attendance to these seminars is optional. However, it can help you to expand your knowledge in immunology and learn about the cutting-edge research in the field. Seminars are live on Wednesdays 9 AM PST and also recorded since April 22nd 2021, so you have recordings for a great variety of seminars to learn from as you wish.

11) EXAMS:

Your performance in the course will be evaluated by attendance to discussion sections (5%), 2 midterm exams (25% each) and the final exam (45%). There are no scheduled make-up exams. Note that all discussion sections held in your scheduled turn will add up to 5% of your grade. A proportional percentage (i.e. 5% ÷ total number of sections held in your scheduled turn) will be discounted for each discussion section you were absent. Failure to take the exam will result in a zero. Extraordinary circumstances preventing you from taking an exam must be discussed in advance with the Student Affairs Office (1128 Pacific Hall) and Dr. Zuniga. If exceptions are made for these special circumstances, the make-up will be an ORAL exam given by Dr. Zuniga. Exams will consist of fill in the blank

and multiple choice questions. An ID card (student ID or driver's license) will be required at every exam.

Midterms: Exam 1, covering all material covered and reading material assigned for lectures 1-7. Exam 2, covering all material covered and reading material assigned for lectures 9-14.

Final: Covering all lecture and reading material assigned the entire class with emphasis on material and reading assigned for lectures 15-20.

Guidelines for exams via Zoom

1) Exams will be taken online and can only be attended synchronously (dates and times indicated above in lectures schedule)
2) Exam will be taken using Canvas and proctored via Zoom
3) All students taking the exam MUST join the Zoom session (same link used for lectures) and leave their cameras on all the times).
4) You will be protracted via your camera, so you cannot turn off your camera or leave your camera anytime during the exam (no bio breaks will be allowed, so please plan ahead).
5) You will not be allowed to leave the Canvas page during the exam (please note that this will be monitored automatically by Canvas).

12) REVIEW SESSIONS:

The IAs will hold 2-hour review sessions on the Saturdays before each midterm and the final exam. IAs will post Zoom link for review session in class website. Final times and locations will be indicated in course website or announced in lecture before corresponding review session

	Day/Time *(2h sessions on weekend before each exam)*	Location	IAs
Mid 1	TBA in lecture and course website	Zoom link will be posted by IAs in **"Zoom LTI PRO" folder**	Dina &Letitia
Mid 2	TBA in lecture and course website	Zoom link will be posted by IAs in **"Zoom LTI PRO" folder**	Dina & Filipe
Final	TBA in lecture and course website	Zoom link will be posted by IAs in	Letitia & Filipe

		"Zoom LTI PRO" folder	

13) GRADING:

The grading is normalized to the higher scores (average of top 5 scores). After score normalization, 60-70% will be a D, 70-80% will be a C (>76% C+), 80-90% will be a B (>86% B+), and 90-100% of that will be an A (>96% A+). If you have a concern about your grade or your performance on an exam, you must address this with me within one week of the exam following the re-grade policy below, no exceptions.

REGRADE POLICY:

1. Send Professor Zuniga a word document (after lecture) specifying which specific problem should be looked at and fully describe why you think the problem was wrongly graded.

2. The re-grade request must be send via email to Prof Zuniga after lecture within 1 week after the exams are graded.

Extra-credit: TBA

14) The Learning Environment:

Participation in class (e.g. questions or responses to questions by the instructor) is strongly encouraged and contributes to a rich, interactive learning environment. Please refrain from eating, reading newspapers, scanning the web, and engaging in conversations during lectures and sections. Cell phones and messaging devices should be turned off. If you must leave class early, please sit in the back in an aisle seat so that you do not disturb others. Following these guidelines will help you, your colleagues, and instructors to stay focused on the material.

Class participation: during synchronous lectures, all students will have microphone disabled. This will prevent disruptions from the background noise of each atendee. There will be several instances where you'll be able to participate during lecture. If you have a question during lecture you can **use the "raise hand" tool in Zoom** (under the "participants" tab) to call instructors attention. If you raised your hand, we will enable your microphone functions so you can ask your question. If you raised your hand but your question is answered before your turn to ask please make sure that you "lower your hand" in Zoom (this will allow us to answer more questions whenever possible).

15) Academic integrity:

Work on exams must be solely your own. Cheating will not be tolerated and will result in an F in the course, as well as any additional disciplinary actions as indicated by the policy to maintain academic honesty. Please note, letting someone cheat off of your exam is cheating!!

Please review UCSD's Policy on Academic Integrity:

http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/appendices/2

On each of your exams I will ask you to sign an honor code stating: *"I pledge not to cheat, plagiarize, steal, or lie in matters related to academic work."*

There will be NO written material allowed for reference during any of the exams.