

Virology BIMM114

Winter 2018

Location: Sequoyah Hall (SEQUO) 148

Date/Time: Mondays, Wednesdays and Fridays from 12:00pm-12:50pm

Instructor: Matt Daugherty

Office hours: Wednesday 2:00pm-3:00pm in Pacific Hall 3501

Email: MDDaugherty@UCSD.edu (Put BIMM114 in the subject line!)

Course Summary:

Viruses are responsible for numerous human illnesses and millions of deaths annually. Some of the most feared, widespread and devastating human diseases such as smallpox, influenza, dengue fever, yellow fever, measles and AIDS (Acquired immunodeficiency syndrome) are caused by viruses. Similarly, viruses cause a number of recently emerging diseases, including Ebola hemorrhagic fever, severe acute respiratory syndrome (SARS), Zika virus infection and influenza pandemics. In addition, viruses infect animals, plants and insects of importance to humans, where they can have tremendous consequences for the world economy and environment. During this quarter, we will explore the complex biology of viruses, their life cycle and pathogenesis, how they evade the immune system and how they often disable or kill their host. We will cover the history of virology, general principles of viral infections, and specifics of viral families with emphasis on individual viruses that have changed human history, are currently major health burden and/or represent a serious threat for mankind.

Prerequisites: BIMM100 (Molecular Biology), and its prerequisites.

Course website: Available on TED

Textbook:

The **required** textbook is *Fundamentals of Molecular Virology*, 2nd edition by Nicholas Acheson. Mandatory reading assignments, indicated on the schedule, are associated with every lecture. The reading assignments should be completed before the corresponding lecture. This will enhance your ability to successfully answer clicker questions. It will also contribute significantly to your understanding of the lecture, even if you did not understand all the material the first time you read it. Do not be discouraged. It is normal for new understandings to develop over multiple exposures to any novel material. Research in psychology has shown that students who read before coming to lectures gain far more from the lecture than those who do not. Further reading material from outside sources will be posted on the TED website and announced in class.

An eBook of the textbook is available as a purchasing option for this course. You can access this eBook by clicking the RedShelf tool within TritonEd. If you opt-in to this eBook by clicking the "Opt-in Now" button your student account will be charged directly. You will also receive an email with the exact amount of this charge. Within the add/drop period you may also opt-out of this option if you decide you'd rather use an alternate format.

Lectures:

Lectures will provide information not contained in the reading and are important to get a perspective on the most important aspects of each topic that will be evaluated in the exams. Please note that the indicated schedule and readings may be modified somewhat during the quarter, and any changes will be announced in lecture. Lecture slides will be posted on the class website <24 hours after the lecture, with all attempts to make them available before class. However, these notes are not intended to replace lecture, as there will likely be material

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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.

Podcast: This course will be available at podcast.ucsd.edu

Classroom etiquette:

Because this is a lecture class, minimizing distractions is important. Please have respect for your classmates and the instructor by silencing cell phones and other electronic devices, not talking, and minimizing other distracting activities in class.

Office hours with Dr. Daugherty:

Wednesday 2:00pm-3:00pm in Pacific Hall 3501. Office hours will be held every week except the first week of class and when there has been an exam that day. I would be happy to talk with you about the class, virology in general, science and your studies.

Email communication:

Please put BIMM114 in the subject and remember to include your first and last name in the body of the email. I will not respond to any questions regarding the content of the exams by email or answer lengthy questions on course material, or schedule a meeting with you or anything else that can be done in person before/after class or during office hours. I will address questions about the course material during office hours.

Instructional assistant:

Brian Tsu

Office hours: Tuesday 2:00pm-3:00pm on the fifth floor of the Natural Sciences Building in the "Scholarly activity room" (aka, the lunch room)

Email: BVTsu@UCSD.edu (Put BIMM114 in the subject line!)

Discussion sections:

Monday 5:00pm-5:50pm and 6:00-6:50pm in Warren Lecture Hall (WLH) 2110

Discussion sections are a valuable part of this course, and although discussion sections are not mandatory, I highly recommend that you take part in them. These sections serve to clarify, emphasize and expand points that have been introduced in lecture. Brian, who is a graduate student in my lab and studies host-virus interactions, will craft each meeting to include opportunities for problem-solving, discussion, and expansion on particularly timely topics.

There will be no sections the first week of class. Sections will begin the second week of class. Please attend the section you are assigned to due to space limitations in the classroom.

Clickers:

To enrich your learning experience through class participation, I will use clickers in lectures. You are required to purchase an iClicker remote (available in bookstore) and register it online for in-class participation. We will start using clickers in the second or third week, so please register your clicker before January 14th. You will be graded for participation, not based on correct answers, although I encourage you to take the questions seriously as they are examples of questions I might ask on an exam. Participation in clicker questions will count for up to 5% of your final grade, with points being scaled according to how many questions you answer throughout the quarter. You will be allowed to miss 20% of the clicker questions and still get full credit. Please remember that bringing a clicker for a classmate is considered cheating and both students will receive a failing grade in the class and be referred to the Office of Academic Integrity for administrative discipline.

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Films:

There will be three films that will be required viewing in this course. One will be shown in section the second week. If you miss that film in section, you will have to go to the library to view it, so I strongly encourage you to attend section and watch it. The other two will be viewed on your own time. Links to these will be posted in a "films" folder on TED by the end of week 1. (There may also be links to some additional films/podcasts provided purely for your own interest, but not required.) Films will be available online, streaming from library reserves or directly from the producer's web site. When accessing films through UCSD library reserves, you *must* access the films from within the UCSD protected network, or use a VPN if you are off campus.

Review sessions:

Review sessions will be held on from 5:00pm - 7:00pm the Tuesday before the two midterms and final exams. Room locations are listed below:

January 29: Pacific Hall 3500

February 19: To be announced

March 19: To be announced

Exams:

Your performance in the course will be evaluated by two in-class midterm exams, the final exam and iClicker participation. Exam and grading policies are as follows: Exams will consist of fill in the blank, short answer, multiple choice, and short essay questions. Pens, a #2 pencil and an ID card (student ID or driver's license) will be required at every exam. There are no scheduled make-up exams. Failure to take the exam will result in a zero. Extraordinary circumstances preventing you from taking an exam must be discussed in >24 hours in advance with the Student Affairs Office (1128 Pacific Hall) and Professor Daugherty. If exceptions are made for these special circumstances, the make-up will be an ORAL or ESSAY exam given by Professor Daugherty. There will be only one final given, I am sorry but it is impossible to accommodate those with multiple finals on the same day.

Midterm I: Given in class on January 30. Worth 25% of your grade. Will cover all lecture and reading material assigned for lectures 1-9.

Midterm II: Given in class on February 20. Worth 25% of your grade. Will cover all lecture and reading material assigned for lectures 11-17.

Final: Given on **March 20 11:30am – 2:30pm**. Worth 45% of your grade. Covering all lecture and reading material assigned the entire class with emphasis on material and reading assigned for lectures 19-28.

Clickers/participation: Worth 5% of your grade. Starting in the second or third week of lectures, there will be questions during class that will be answered with your clicker. You will be graded for participation, not based on correct answers. Points will be scaled according to participation. You will be allowed to miss 20% of the clicker questions and still get full credit.

Viruses In The News! To encourage you to apply your newfound virology knowledge to things you read/hear in the news, you can earn up to 5% extra credit toward your grade at any point in the quarter by identifying an article from a credible popular news source about emerging viruses and emailing me a brief (1-2 pages or 500-1000 words) summary

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of the article, its relevance to the course, and why you found it interesting/newsworthy. Please include either the link to the article or the full article in your summary that you email me and include 'BIMM 194 – Viruses in the News' in the subject line of the email. Judging of merit in these cases is entirely subjective and will be primarily used to help decide grades on the borderline. Examples of credible popular news sources include (but are certainly not limited to): NPR, NY Times, National Geographic, and BBC, but does not include BuzzFeed, People magazine, or some random thing you heard someone say.

Grading:

Grading is normalized to the highest score in the class (prior to any extra credit). 60-70% of that score will be a D, 70-80% will be a C, 80-90% will be a B and 90-100% of that an A. If everyone does well, then it would possible for the whole class to receive A's or at least a high B; however, given the challenging nature of the material, this is unlikely. You are not competing with your fellow students. There is no shortage of high grades for those who do well. It is my hope that everyone will study hard enough to demonstrate sufficient knowledge of Virology to earn an A or B. However, do not rely on your peers doing poorly...it is you against the material. If you have concern about your grade or performance on an exam you must address this with me within one week of the exam, no exceptions. **DO WORK THAT YOU WILL BE PROUD OF AND STAND BY YOUR PERFORMANCE.**

Regrading policy:

Exams must be written in pen ONLY (no pencil) or will not be accepted for regrade. Exams written in pen but having writing masked by any form of white-out or correction tape will not be accepted for regrade. To submit a request for a regrade, you must:

1. Write a cover letter specifying which specific problem should be looked at and fully describe why you think the problem was wrongly graded. I will consider no more than three "potential" errors per exam.
2. Include your email address in your cover letter so that I can contact you regarding the decision on the regrade.
3. Attach the cover letter to the exam and deliver to Dr. Daugherty. The regrade request must be delivered within 1 week after the graded exams are returned. If you submit an exam for a regrade, I may choose to regrade the entire exam. If I think the grading was too generous, for the sake of accuracy I reserve the right to *lower* your score.
4. Please be advised that a random sampling of exams will be photocopied. If exams submitted for regrade are found to be altered, this will be considered a breach in academic honesty and will result in failure of the course.

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>

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Class schedule:

<u>Date</u>	<u>Session</u>	<u>Topic</u>	<u>Relevant reading</u>
Jan 7	1	Introduction & history	None required
Jan 9	2	History & methods	pg. 2-11, 312-313
Jan 11	3	Structure	pg. 18-27
Jan 14	4	Classification	pg. 31-40
Jan 16	5	Replication cycle	pg. 11-17, 26-30 and Chapter 4
Jan 18	6	Replication cycle II	pg. 11-17, 26-30 and Chapter 4
Jan 21	No class	Martin Luther King, Jr. holiday	
Jan 23	7	Host defense	Chapter 33
Jan 25	8	Host defense II	Chapter 34
Jan 28	9	Evolution	pg. 40-44, outside reading*
Jan 30	10	Midterm I	
Feb 1	11	+ss RNA: Picornaviruses	Chapter 11
Feb 4	12	+ss RNA: Flaviviruses	Chapter 12
Feb 6	13	+ss RNA: Toga- and coronaviruses	Chapter 13 & 14
Feb 8	14	-ss RNA: Paramyxo- and filoviruses	Chapter 15 & 16
Feb 11	15	-ss RNA: Arena and bunyaviruses	Chapter 17
Feb 13	16	-ss RNA: Orthomyxoviruses	Chapter 18
Feb 15	17	ds RNA: Reoviruses	Chapter 19
Feb 18	No class	Presidents' Day holiday	
Feb 20	18	Midterm II	
Feb 22	19	Small dsDNA: Polyoma- and papillomaviruses	Chapter 21 & 22
Feb 25	20	Large dsDNA: Adeno- and herpesviruses	Chapter 23 & 24
Feb 27	21	Large dsDNA: Poxviruses	Chapter 26
Mar 1	22	Hepatitis B virus (HBV)	Chapter 30
Mar 4	23	Retroviruses	Chapter 28
Mar 6	24	Human immunodeficiency virus (HIV)	Chapter 29
Mar 8	25	Vaccinies/antiviral drugs	Chapter 35 & 36
Mar 11	26	Endogenous viruses	Outside reading*
Mar 13	27	Emerging viruses	Outside reading*
Mar 15	28	Non-mammalian viruses (phages, mimiviruses, etc.)	Chapter 7, Chapter 27
Mar 20	Final exam - 11:30am - 2:30 pm		

* - outside reading will be posted on the course website the week before the class for which it is assigned

Please note the dates of the midterms and final. There will be no make-up exams possible.

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How can I succeed in BIMM 114?

1. **Read** the assigned pages before lecture. You will understand the lectures better. You will learn more from the clicker questions. The lecture will be based upon the reading, but there will not be enough time to cover every detail in class. Nevertheless, you are accountable for all reading on the exams. If you bump into material that is too technically challenging, *don't get bogged down*. Skip it (temporarily). Return to the most difficult material later.
2. **Outline** the important points as you read on index cards or a notebook. This will help you remember the flow of information and contextualize the details.
3. **Come** to class and sit toward the front. Participate in clicker questions and discussion.
4. **Listen** to the podcast.
5. **Review** your notes and the lecture slides. Slides will NOT contain the instructor's notes. They will contain announcements, illustrations, diagrams, and photos which augment the lecture. They will be posted after each lecture. You are accountable for everything in the lecture slides.
6. **Study in groups**. You are encouraged to study with other students in the course. However, work on exams must be solely your own. See "Academic Integrity" statement above.
7. **Go** to your discussion section and office hours. There will be opportunities to review the material, ask questions, and work on problem sets.
8. **Engage** with the material. If you are curious and invested in learning about virology, you have a much higher chance of absorbing and retaining the material and getting a good grade.