

BIMM110, Winter 2017 Syllabus

Lectures:

MWF 2:00pm-2:50pm Warren Lecture Hall 2001

This is a hybrid class: learn the basics before lecture, so we can get to advanced material in class. Sections are very important part of this course: this is where you will test your learning by solving problems and explaining the material to your group. unless stated otherwise on the syllabus, the sections are mandatory.

All lecture slides will be posted on the website and are available for download after class. The lectures will be videocasted (capturing the slides and my voice).

COURSE GOALS:

At the end of this course you should be able to

1. Explain the current understanding and the available treatments of several representative human diseases
2. Evaluate scientific evidence (data from scientific papers), identify questions that remain to be answered, and possible ways to answer them
3. Be able to communicate scientific ideas in clear scientific writing
4. Become more comfortable working in a team

OFFICE HOUR, DR. TOUR: TUE, 11AM-12PM, YORK 2300

TEXTBOOK There is no required course textbook. Instead, we will use review articles, original research papers, and reliable websites.

GRADING

The grades in this course will not be curved. Overall course letter grades will be assigned using the following scheme:

90-100% A (A-, A, A+)

80-89.95% B (B-, B, B+)

67-79.95% C (C-, C, C+)

50-66.95% D

0-49% F F

Grades will be determined as follows:

- 2 Midterms: 30% of the final grade (15% each).
- Final exam (cumulative, all material covered) at least 60%*

(*if your Final exam grade is higher than any of the Midterm grades, Midterm grade/s will be replaced by the Final exam grade)

- Problem sets 3%
- Research papers-based homework 3%
- Sections work 1%

- Orange-box clicker questions 2%
- Green-box clicker questions 1%

Exams:

Please note that no regrades will be considered for the midterm exams, except for incorrect addition of points (no exceptions).

Missing Midterm: you can miss the Midterm/s – and have those points come from your final exam. However, I strongly recommend taking the midterm, because it's a great low-stress practice. Since it takes several days to write an exam, we will not be able to offer make-up exams. Please check your schedule and make sure that you are available on the date of the final exam. If you have a conflict with the final exam in another class, please drop this or the other class. If you are having a family or medical emergency during the final exam, please provide documentation (e.g., emergency room paperwork) and contact the instructor as soon as you can to schedule a comprehensive oral exam.

Problem sets 3%: Problem sets are due before 12PM on Monday of the week the problem set is discussed. They will be graded based on your effort. They will be graded as follows:

2 = (S) Satisfactory, 1 = (I) Improvement needed, 0 = (N) No credit.

Papers and sections participation grade: Section attendance is mandatory unless indicated otherwise. **1%** of your grade will come from your active participation in paper discussions. The other **3%** will come from section papers. Guidelines for section papers will be provided. The papers are due on before 12PM on Monday of the week the paper is discussed . They will be graded as follows: 2 = (S) Satisfactory, 1 = (I) Improvement needed, 0 = (N) No credit.

Clicker questions:

Orange box questions, 2%. Each class section will start with several clicker questions that will be based on your understanding of the homework reading. These questions will be framed in orange box and will contribute to 5% of your grade. Answer at least 85% of them correctly (the count will start on January 18th, but you can start accumulating points starting week 1) and 5% of your grade is an automatic A

Green box questions, 1%. These are scored based on participation (not whether you answered them correctly). To get full credit, you need to answer (click) to at least 85% of the green box questions (the count will start on January 18th, *but* you can start accumulating points starting week 1)

Sections Information

Section	Day	Time	Room	IA name email	Office hour
A01	T	05:00 P 05:50 P	SEQUO147	Alannah Miranda ahmirand@ucsd.edu	
A02	T	06:00 P 06:50 P	SEQUO147	Arya Anvar aanvar@ucsd.edu	
A03	W	05:00 P 05:50 P	HSS 2321	Aden Haskell- Mendoza apmendoz@ucsd.edu	
A04	W	06:00 P 06:50	HSS 2321	Dania Annuar dannuar@ucsd.edu	
A05	W	08:00 A 08:50 A	WLH 2113	Thanh Tran tdt008@ucsd.edu	
A06	W	09:00 A 09:50 A	WLH 2113	Thanh Tran tdt008@ucsd.edu	
A07	W	10:00 A 10:50 A	WLH 2113	Bianca Endo bendo@ucsd.edu	
A08	W	07:00 P 07:50 P	SOLIS 110	Erin Johnson evjohnso@ucsd.edu	
A09	W	08:00 P 08:50 P	SOLIS 110	Stephanie Chen stc014@ucsd.edu	
A10	Th	07:00 P 07:50 P	HSS 1305	Abdi Abdullahi a2abdull@ucsd.edu	
A11	F	10:00 A 10:50 A	APM 2301	Alannah Miranda ahmirand@ucsd.edu	

STUDENTS WITH DISABILITIES Reasonable accommodations will be provided for qualified students with disabilities. If you have any disability that may impair your ability to complete the course successfully, please contact me during the first week of the course.

ACADEMIC INTEGRITY

We take academic integrity very seriously. Cheating undermines honest effort and hard work by other students. It will not be tolerated. Cheating on exam, submitting someone else's work as your own, clicking in for another student, copying all or parts of someone else section paper are all examples of academic dishonesty. Please talk to the instructor or the IA immediately if you learn of any incidents of academic dishonesty

UCSD Policy of Academic Integrity, student's responsibilities:

Students are expected to complete the course in compliance with the instructor's standards. No student shall engage in an activity that involves attempting to receive a grade by means other than honest effort; for example:

No student shall knowingly procure, provide, or accept any unauthorized material that contains questions or answers to any examination or assignment that is being, or will be, administered. No student shall complete, in part or in total, any examination or assignment for another person. This also includes asking someone else to do the iClicker voting for you. In this case, both students will be reported to the Academic Integrity office.

No student shall knowingly allow any examination or assignment to be completed, in part or in whole, for himself or herself by another person.

No student shall plagiarize or copy the work of another person and submit it as his or her own work.

No student shall employ aids excluded by the instructor in undertaking course work or in completing any exam or assignment.

No student shall alter graded class assignments or examinations and then resubmit them for regrading.

No student shall submit substantially the same material in more than one course without prior authorization.

Completing paper assignments: using sentences from scientific papers and websites is plagiarism (this includes copying and pasting sentences and changing a few words in them). Paper assignments will be submitted to Turnitin. If plagiarism is detected, your assignment will receive an automatic 0 (no exceptions). To avoid plagiarism, be sure to first understand what you are about to write. Then write in your own words. If you do so, your text will not be similar to authors' text. If you are having difficulties with writing based on scientific articles, please talk to the IAs or to me.

Consequences of cheating:

Cases of cheating will be reported to the Office of Academic Integrity, who will forward them to the Dean of the student's college. In addition, the grade for the assignment in which the cheating occurred will be an 'F'. Cheating on exam will result in 'F' in the course, as well as in administrative consequences. To learn more, please read:

<https://students.ucsd.edu/academics/academic-integrity/consequences.html>

HOW TO SUCCEED IN THIS CLASS

- ❖ Do the assigned reading. Serious engagement with the material before class will lead to significantly higher gains in class
- ❖ Be proactive, reach out and get help! If you are having troubles with any part of the course material, talk to me or the IA's and come to our office hours. Please don't wait! We care about the success of each and every student and we want to help.
- ❖ Critical thinking is hard. Work with your group or form a study team, and put your collective intelligence to work. Come to my and IA's office hours (and sections) and ask questions. Don't be discouraged if you don't understand everything: you are here to learn.
- ❖ Plan ahead. If you anticipate that you'll need help with a homework or with exam prep, allow yourself enough time to attend office hours and get your questions answered. I or the IA's will not be able to answer last minute questions emailed to us few hours before exam. To get best help, see us in person.
- ❖ Attend classes and sections. Do the section and in class activities. It takes time to build up knowledge and skills, don't leave it to the last minute. Cramming the night before the exam will not work in this class.

Good luck! We want all of you to succeed!

DATE	TOPIC	HOMEWORK (MANDATORY UNLESS INDICATED OTHERWISE)	SECTIONS attendance mandatory, unless stated otherwise
Week 1 Mon. 1/9	What to expect from this course Cystic fibrosis: Introduction	Atul Gawande “Better” Ch. The Bell Curve (pdf will be available on Ted)	Week 1: - Get to know your IA and other members of your section - Groups form - Practice solving genetic pedigrees - Submit the names of the students in the group and your group name to your IA
Wed. 1/11	Cystic fibrosis: mutations and their effect, Part 1	Watch: The function of mucus, cilia in the lungs, the first 3 min 30 sec: https://www.youtube.com/watch?v=FQwqhblxz3I CFTR structure and its mutations: https://www.youtube.com/watch?v=_j99-xgOlaw Be able to answer questions posted in Lecture 1 slides	Extra credit this week: Online reflection: Most difficult aspects of scientific papers and CURE surveys
Fri. 1/13	Cystic fibrosis: mutations and their effect, Part 2	Read Wang et al., (2014) Understanding how cystic fibrosis mutations disrupt CFTR function: From single molecules to animal models. The International Journal of Biochemistry & Cell Biology 52 (2014) 47–57.	
Week 2 Mon., 1/16	No class, Martin Luther King, Jr. Holiday		Week 2: Problem set 1 is due on Monday, before noon and is discussed in sections (please note that answers will not be posted)
Wed. 1/18	Cystic fibrosis: treatments and challenges	Read: Fajac and De Boeck (2016) New horizons for cystic fibrosis treatment. Pharmacology & Therapeutics.	

Fri. 1/20	CRISPR	<p>Watch: https://www.youtube.com/watch?v=2pp17E4E-O8</p> <p>iBiology seminar by Dr. Jennifer Doudna: https://www.youtube.com/watch?v=SuAxDVBt7kQ</p>	
Week 3 Mon. 1/23	CRISPR-based therapies for CF Dr. Marco Weinberg		<p>Week 3</p> <p>Bring to your section: a printout (one page/group) of your group's members: a picture+name+something you want to share about yourself</p> <p>In sections: Discussion of a groundbreaking paper by UCSD researchers "The mutagenic chain reaction: A method for converting heterozygous to homozygous mutations. Gantz <i>et al.</i></p> <p>Access it here: http://scienceintheclassroom.org/research-papers/can-we-handle-power-crispr/university</p>
Wed. 1/25	Modeling genetic diseases in animals and cells	Watch two short video lectures: adding, deleting or altering genes. Links can be found on Ted/Content/Video lectures.	
Fri.	UCSD-UCI	Read: Biologists Create Malaria-Blocking	

1/27	research promising to contain Malaria	<p>Mosquitoes</p> <p>http://ucsdnews.ucsd.edu/pressrelease/biologists_create_malaria_blocking_mosquitoes</p> <p>http://www.sandiegouniontribune.com/news/2016/jun/03/gene-drive-bier-gantz-ucsd/</p> <p>Read https://www.sciencenews.org/article/crispr-inspires-new-tricks-edit-genes?tgt=nr</p>	
Week 4 Mon. 1/30	Midterm 1		Week 4: Discussion sections not mandatory
Wed. 2/1	Neuro-degenerative diseases Alzheimer's 1 disease, part 1	<p>Read: "What Is Alzheimer's?" by Alzheimer's association</p> <p>http://www.alz.org/alzheimers_disease_what_is_alzheimers.asp</p>	
Fri. 2/3	Alzheimer's: the role of A β peptide or oligomers?	Read: Hardy and Higgins (1992) Alzheimer's disease: the amyloid cascade hypothesis	
Week 5 Mon. 2/6	Alzheimer's disease as a prion disease?	<p>Read: Nussbaum, Seward, and Bloom (2013). Alzheimer's disease: A tale of two prions.</p> <p>Or one of the primary articles?</p>	<p>Week 5</p> <p>Submit homework based on the paper below before Monday, 12PM.</p> <p>In sections: discussion of data from the paper:</p> <p>Reducing Endogenous Tau Ameliorates Amyloid β-Induced Deficits in an Alzheimer's Disease Mouse Model.</p> <p>Roberson <i>et al.</i></p> <p>http://scienceintheclassroom.org/research-papers/reducing-endogenous-tau-</p>

			ameliorates/university
Wed. 2/8	Alzheimer's: diagnostics and treatments in development	Read: http://www.nature.com/news/antibody-drugs-for-alzheimer-s-show-glimmers-of-promise-1.18031 (need to be connected to UCSD Protected network for access)	
Fri. 2/10	Change of paradigm: A β peptide as a defense mechanism	Read: Golde (2016) Host immune defence, amyloid- β peptide and Alzheimer disease Nat Rev Neurol. 12(8):433-4 (find it on Pubmed, be sure to connect to UCSD Protected network for access)	
Week 6 Mon. 2/13	A mystery disease activity	Read: http://www.pbs.org/wgbh/frontline/article/new-87-deceased-nfl-players-test-positive-for-brain-disease/	Week 6: Problem set 2 is due on Monday before 12PM and is discussed in sections
Wed. 2/15	Guest speaker: Dr. Christina Sigurdson, UCSD School of Medicine		
Fri. 2/17	Review	Using free flowchart software https://www.draw.io/ construct a concept map of your understanding of AD	
Week 7 Mon.	No class, Presidents' Day		Week 7 Sections non-mandatory

2/20			
Wed. 2/22	Midterm 2		
Fri 2/24	Diabetes Insulin secretion and type 1 Diabetes	Watch: Insulin secretion and its disruption in Type 1 Diabetes (the link is also posted in Content/Video Lectures) Build a concept map of the concepts from this video. You can use free flowchart software https://www.draw.io/ . Bring an electronic or a hard copy version to class	
Week 8 Mon 2/27	Insulin signaling and type 2 Diabetes	Watch: Insulin signaling and type 2 Diabetes video: Insulin Signaling (the link is also posted in Content/Video Lectures). Add concepts from this video to the Diabetes concept map you started. Bring an electronic or a hard copy version to class	Week 8 Problem set 3 is due on Monday before 12PM and is discussed in sections
Wed. 3/1	Failure of beta cells	Reading TBA	
Fri. 3/3	Dr. Marc Montminy, The Salk Institute	Before Friday class: upload a concept map of the relationship between insulin secretion, insulin signaling, and their impairment in Type 2 diabetes	
Week 9 Mon. 3/6	Insulin resistance and Obesity – Metabolic syndrome – Type 2 Diabetes connection	Reading TBA	Week 9: Submit homework based on the paper below before Monday, 12PM Paper discussion: Requirement for p53 and p21 to Sustain G2 Arrest After DNA Damage. Bunz <i>et al.</i> <i>Access it here</i> http://scienceintheclassroom.org/research-papers/requirement-p53-

			p21-sustain/university
Wed. 3/9	Lung cancer	Reading TBA	
Fri. 3/10	Lung cancer: molecular mechanisms		
Week 10 Mon. 3/13	Lung cancer: treatments		
Wed. 3/16	Lung cancer: immunotherapies		Week 10: Problem set 4 is due on Monday before 12PM and is discussed in sections
Fri. 3/18	Summary		
	TBD	IA's-led review session	
Final exam: Mon, March 20, 3- 6pm		Comprehensive, all topics covered	