

**BIMM 120 | Microbiology | Winter 2018**

Professor Eric Allen

Tue/Thu 12:30 – 1:50 pm, WLH 2001

	DATE	LECTURE TOPIC	BROCK 13 <sup>TH</sup> ED. READINGS
<b>FUNDAMENTALS OF MICROBIOLOGY</b>	Tu Jan 09	1) Course Overview & Introduction to the Microbial World	Ch1 (1-10), Ch2 (34-36), Ch16 (454-467)
	Th Jan 11	2) Cell Structure & Function Part I: Cell Walls & Membranes	Ch3 (48-64)
	Tu Jan 16	3) Cell Structure & Function Part II: Other Structures & Inclusions; Biofilms	Ch3 (64-81), Ch23 (674-676), Ch5 (133)
	Th Jan 18	4) Molecular Biology of Bacteria & Archaea	Ch6 (151-157; 170-174), Ch7 (192-197)
	Tu Jan 23	5) Microbial Differentiation, Regulation & Sensing	Ch8 (210-223; 226-231)
	Th Jan 25	6) Genomics of Microorganisms	Ch12 (314-323; 327-333) + <b>Paper #1</b>
	Tu Jan 30	7) Mobile Genetic Elements & Horizontal Gene Transfer	Ch6 (159-162), Ch10 (273-281; 286-288), Ch12 (333-336) <i>Homework 1 assigned</i>
	Th Feb 01	8) Microbial Growth & Cell Cycle	Ch5 (118-132)
	Tu Feb 06	9) Wrap up cell cycle & REVIEW lectures 1-8	<i>Homework 1 due</i>
	Th Feb 08	<b>*** MIDTERM EXAM ***</b>	-----
<b>MICROBES IN THE ENVIRONMENT</b>	Tu Feb 13	10) Microbial Trophic Dynamics: Carbon & Energy	Ch4 (86-90; 92-98; 106-108)
	Th Feb 15	11) Metabolic Diversity I: Respiration & Fermentation	Ch4 (98-101), Ch14 (373-377; 381- 388; 390-394; 395-397)
	Tu Feb 20	12) Metabolic Diversity II: Photosynthesis & Other Autotrophies	Ch13 (341-354; 354-358; 361-367)
	Th Feb 22	13) Microbial Ecology I: Microbial Species & Evolution	Ch16 (447-452; 467-470)
	Tu Feb 27	14) Microbial Ecology II: Biogeochemistry, Elemental Cycles	Ch23 (670-673), Ch24 (699-709) + <b>Paper #2</b>
	Th Mar 01	15) Microbial Bioremediation	Ch24 (713-717)
	Tu Mar 06	16) Metagenomics: Sampling the Unknown	Ch22 (649-658) + <b>Paper #3</b> <i>Homework 2 assigned</i>
	Th Mar 08	17) Symbiosis: Plant- & Animal-Microbe Interactions	Ch25 (723-730; 732-741; 745-749), Ch27 (793-796)
	Tu Mar 13	18) Microbiomes	Ch9 (237-238; 247-254) <i>Homework 2 due</i>
	Th Mar 15	19) Catch up day & Final Exam review	-----
Tu Mar 20	<b>*** FINAL EXAM 11:30 AM – 2:30 PM ***</b>		

Class web site: <http://tritoned.ucsd.edu/> (syllabus, lectures, assigned papers, homeworks, IA docs, etc.)

Textbook: "Brock Biology of Microorganisms" by Madigan *et al.* Any recent edition is acceptable: 12<sup>th</sup> ed. (2008), 13<sup>th</sup> ed. (2010), 14<sup>th</sup> ed. (2014), or 15<sup>th</sup> ed. (2017). Note that the above assigned readings are for the 13<sup>th</sup> ed....

**CONTACT INFORMATION****Professor Eric Allen**Email: [eallen@ucsd.edu](mailto:eallen@ucsd.edu)Office Hours: *by appointment*

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SIO Shuttle: Pick up outside Mandeville – get off at SIO shuttle stop on La Jolla Shores Dr. (every 15 min)

Shuttle information: <https://transportation.ucsd.edu/shuttles/sio.html>**Instructional Assistants****email****Office Hours**

Marie Adomako

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Tuesdays 3:00 – 4:00 pm @ AP&amp;M Annex 4882

Alex Neu

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Thursdays 10:00 – 11:00 am @ AP&amp;M Annex 4882

Gwen Chang

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Wednesdays 11:00 am – 12:00 pm @ MOM

Irfan Habib

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Mondays 12:00 – 1:00 pm @ Price Center Theater

Jasper Lee

[jbl003@ucsd.edu](mailto:jbl003@ucsd.edu)

Tuesdays 5:00 – 6:00 pm @ Perks Coffee Shop

David Martin

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Thursdays 3:00 – 4:00 pm @ Price Center Plaza

Christine Vo

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Mondays 4:00 – 5:00 pm @ Price Center Theater

Brandon Hong

[bdh001@ucsd.edu](mailto:bdh001@ucsd.edu)

Mondays 10:00 – 11:00 am @ MOM

Alex Scavo

[ascavo@ucsd.edu](mailto:ascavo@ucsd.edu)

Mondays 4:30 – 5:30 pm @ MOM

**Discussion section times and locations:**

Section	Time	Location	IA
A01	Mon 8:00 - 8:50 am	HSS 2154	Alex N
A02	Mon 9:00 – 9:50 am	HSS 2154	Alex N
A03	Mon 10:00 – 10:50 am	HSS 2154	Irfan
A04	Mon 6:00 – 6:50 pm	CENTR 218	Christine
A05	Mon 7:00 – 7:50 pm	CENTR 218	David
A07	Tue 7:00 – 7:50 pm	CENTR 218	Jasper
A08	Tue 8:00 – 8:50 pm	CENTR 218	Gwen
A09	Wed 8:00 – 8:50 am	CENTR 217B	Marie
A10	Thu 8:00 – 8:50 am	YORK 3000A	Marie
A11	Fri 5:00 – 5:50 pm	CENTR 218	Alex S
A12	Fri 9:00 – 9:50 am	CENTR 218	Brandon

You are not required to attend discussion sections but you will find regular attendance to be highly beneficial as the IA's will review class material and answer questions about the lectures, papers, and recommended readings.

Sections will start the week of Monday Jan 15<sup>th</sup> (week 2)

**Grading:**

There will be one midterm (200 points), one final exam (200 points), and two written homework assignments (50 points each) with a total of 500 points up for grabs in this class. Final grades will be based on the midterm score, the final and the homework assignments. Each exam will consist of True/False and Multiple-Choice questions, with questions taken directly from the lectures and assigned papers. Readings from the text book are highly recommended but are not required. Topics covered in the textbook readings, but not covered in class, will NOT be on the exams....whew!

**Homework written assignments (50 points each):**

For the homework assignments, you will be given one or two questions and asked to write a short essay. Your answer(s) to each question should occupy approximately 1 page (it is okay if more than one page but please be concise). The questions will be posted on TritonEd along with the due date (one week following the date assigned). A printed copy of your homework should be submitted in class by the due date AND uploaded to TritonEd. Be sure to provide references to the source material (primary literature) used to obtain your answers!

**Course Website**

The course TritonEd site contains required readings (i.e. primary research articles) in addition to all lecture notes in .pdf format. Why more reading? Well, microbiology is a highly dynamic science. Many exciting and important findings have yet to find their way into the textbooks which is why we turn to the primary research literature. Not only is reading papers fun but the correct approach to scientific literature can be a very rewarding experience. The materials/methods sections will provide you a ‘train of thought’ as to how the experiments were conducted/conceived (“how did they do that?”) and critical reading of the paper will allow you to evaluate whether or not the results justify the conclusions (“why did they do that?”). These papers will provide a more thorough picture of modern microbiology. The papers will be introduced in class on the lecture date they are assigned and discussed further in your next section meeting. Questions from the assigned papers will appear on the Midterm and Final exams!

**Useful websites:**

PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/> (journal literature portal)

Google Scholar: <https://scholar.google.com/> (journal literature portal)

Small Things Considered: <http://schaechter.asmblog.org/schaechter/> (odds and ends from the microbial world)

Microbe wiki: <http://microbewiki.kenyon.edu> (great resource for exploring a rich variety of microorganisms)

**Assignment schedule at a glance...**

Week	Week Starting	Assignment
1	Mon Jan 08	No paper or homework the first week!
2	Mon Jan 15	No paper or homework the second week!
3	Mon Jan 22	<u>Paper 1</u> : “TBD”
4	Mon Jan 29	Homework 1 assigned
5	Mon Feb 05	Homework 1 DUE & MIDTERM EXAM on Thursday February 8 <sup>th</sup>
6	Mon Feb 12	No paper or homework this week!
7	Mon Feb 19	<u>Paper 2</u> : “TBD”
8	Mon Feb 26	No paper or homework this week!
9	Mon Mar 05	<u>Paper 3</u> : “TBD” plus Homework 2 assigned
10	Mon Mar 12	Homework 2 DUE

**General guidelines for reading the research papers:**

Familiarize yourself with related topics: Read the related material in the textbook to familiarize yourself with the subject matter. Research papers are written for people who already know something about the subject matter.

**Try to answer the following questions as you read the required papers:**1. What questions were addressed in this paper?

Frequently the introduction (or the first few paragraphs of Science and Nature articles) will present background information and raise the questions that will be addressed in the paper.

2. What were the main conclusions from the paper?

The main conclusions will be summarized in the abstract and further discussed in the discussion section. Why were these conclusions important?

3. What experiments were performed to answer these questions?

These will be briefly summarized in the abstract, sometimes also in the discussion (or the last few paragraphs of science or nature papers), and will be discussed at length in the results section of the paper.

4. For each experiment:

What conclusion did the experiment allow? What were the caveats of each experiment? (i.e. were there alternative explanations?) What experiments ruled out these alternatives?

**Read the assigned papers before attending section and ask your IA any questions you may have. If questions remain, attend either your IA's or Dr. Allen's office hours.**

**To prepare for the exams:**

1. Attend the lectures! *ALL questions will come directly from the lectures and assigned papers.*
2. Read the related material in the text (note: the reading assignments will always follow from section-to-section within a chapter; if you have any questions ask your IA). *These readings will reinforce the lectures and provide additional information that you will find useful.* Also don't be afraid to do extra reading to understand the material. Ultimately, if you understand the concepts you are in a much better position to answer the questions!
3. Read the papers! *Both the midterm and final exam will have questions about the papers; these questions will require that you understand the experiments and what conclusions they reveal.*
4. Attend section regularly, as you will be able to ask questions about the lectures and papers.
5. Bring a #2 pencil to exams! *We will use scantrons for our exams – unless otherwise noted, the scantrons will be provided for you at the exams.*
6. Do not cheat! *Disciplinary steps will be taken when cheating is discovered. These steps may include failing the exam and being reported to the appropriate authorities.*

**Based on prior experience, the students who do best in this class attend the lectures and sections, read the textbook for background content, and read the papers before attending section. Make this be YOU!**

**Exam Inquiries:**

During the exam: If you think that a question is written ambiguously or feel that more than one answer is correct, raise your hand and ask me or an assistant for clarification.

After the exam: Prepare a written explanation, with documentation if possible (i.e. references to text), and deliver the query to your IA via email. *Just one written inquiry, and no verbal inquiries, will be considered for each exam, from each student.* If we find that a question has more than one answer or should be discarded after the exams have been graded, all of the exams will be re-graded using the new answer key.

**\*\*\*A MESSAGE FROM OUR FRIENDS AT THE UCSD ACADEMIC INTEGRITY OFFICE:****Statement of Academic Integrity:**

Students are expected to do their own work, as outlined in the UCSD Policy on Integrity of Scholarship <<http://www-senate.ucsd.edu/manual/appendices/app2.htm>>. Academic misconduct will not be tolerated. Any student who engages in suspicious conduct will be confronted and subjected to the disciplinary process. Cheaters will receive a failing grade on the exam, and/or in the course. They may also be suspended from UCSD pursuant to University guidelines. (Translation: just don't do it!)

**Academic misconduct includes but is not limited to:**

1. Cheating, such as using "crib notes" or copying answers from another student during the exam.
2. Plagiarism, such as using the writings or ideas of another person, either in whole or in part, without proper attribution to the author of the source.
3. Collusion, such as engaging in unauthorized collaboration on exams, completing for another student any part or the whole of an exam, or procuring, providing or accepting materials that contain questions or answers to an exam or assignment to be given at a subsequent time.