## BIMM 120 | Bacteriology | Spring 2015

Professor Eric Allen Tue/Thu 12:30 – 1:50 pm, WLH 2001

	DATE	LECTURE TOPIC	BROCK 13 <sup>TH</sup> ED. READINGS
FUNDAMENTALS OF MICROBIOLOGY	Tu Mar 31	1) Course Overview & Introduction to the Microbial World	Ch1 (1-10), Ch2 (34-36), Ch16 (454-467)
	Th Apr 02	2) Cell Structure & Function Part I: Cell Walls & Membranes	Ch3 (48-64)
	Tu Apr 07	<ol> <li>Cell Structure &amp; Function Part II: Other Structures &amp; Inclusions; Biofilms</li> </ol>	Ch3 (64-81), Ch23 (674-676), Ch5 (133)
	Th Apr 09	4) Molecular Biology of Bacteria & Archaea	Ch6 (151-157; 170-174), Ch7 (192- 197)
	Tu Apr 14	5) Microbial Differentiation, Regulation & Sensing	Ch8 (210-223; 226-231)
	Th Apr 16	6) Genomics of Microorganisms	Ch12 (314-323; 327-333) + <b>Paper #1</b>
	Tu Apr 21	7) Mobile Genetic Elements & Horizontal Gene Transfer	Ch6 (159-162), Ch10 (273-281; 286-288), Ch12 (333-336) Homework 1 assigned
	Th Apr 23	8) Microbial Growth & Cell Cycle	Ch5 (118-132)
	Tu Apr 28	9) Microbial Trophic Dynamics: Carbon & Energy	Homework 1 due
	Th Apr 30	*** MIDTERM EXAM ***	
MICROBES IN THE ENVIRONMENT	Tu May 05	10) Metabolic Diversity I: Respiration & Fermentation	Ch4 (86-90; 92-98; 106-108)
	Th May 07	11) Metabolic Diversity II: Photosynthesis & Other Autotrophies	Ch4 (98-101), Ch14 (373-377; 381- 388; 390-394; 395-397),
	Tu May 12	12) Microbial Ecology I: Microbial Species & Evolution	Ch13 (341-354; 354-358; 361-367)
	Th May 14	13) Microbial Ecology II: Biogeochemistry, Elemental Cycles	Ch16 (447-452; 467-470) + <b>Paper #2</b>
	Tu May 19	14) Microbial Bioremediation	Ch23 (670-673), Ch24 (699-709)
	Th May 21	15) Microbial Biotechnology: Natural Products & Bioenergy	Ch24 (713-717)
	Tu May 26	16) Metagenomics: Sampling the Unknown	Ch22 (649-658) +Paper #3 Homework 2 assigned
	Th May 28	17) Symbiosis: Plant- & Animal-Microbe Interactions	Ch25 (723-730; 732-741; 745- 749), Ch27 (793-796)
	Tu Jun 02	18) Guest lecture on something microbial	Ch9 (237-238; 247-254) <i>Homework 2 due</i>
	Th Jun 04	19) Final Review (nothing new!)	
	Mo Jun 08	*** FINAL EXAM 11:30 AM – 2:29 PM ***	

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

Textbook: "Brock Biology of Microorganisms" (13<sup>th</sup> ed., 2010) by Madigan, Martinko, Stahl, Clark <u>or</u> "Brock Biology of Microorganisms" (14<sup>th</sup> ed., 2014) by Madigan, Martinko, Bender, Buckley, Stahl

## **CONTACT INFORMATION**

### **Professor Eric Allen**

Email: <u>eallen@ucsd.edu</u> Office Hours: *by appointment* Office: 4170 Hubbs Hall (Scripps Institution of Oceanography campus) Phone: (858) 534-2570

SIO Shuttle: Pick up outside Mandeville – get off at SIO shuttle stop on La Jolla Shores Dr. (every 15 min) Shuttle information: <u>http://blink.ucsd.edu/facilities/transportation/shuttles/SIO.html</u>

Instructional Assistants	email	Office Hours
Tun Aung	T1aung@ucsd.edu	Wednesdays 11:00 am - 12:00 pm @ Price Theater
Teresa Chen	wec048@ucsd.edu	Wednesdays 3:00 - 4:00 pm @ Café Roma
Victor Contreras	v2contre@ucsd.edu	Wednesdays 6:00 - 7:00 pm @ Hi Thai
Tiffany Gee	<u>tigee@ucsd.edu</u>	TBD
Dieter Lam	<u>dklam@ucsd.edu</u>	Mondays 5:00 – 6:00 pm @ Muir Woods Cafe
Mili Navani	<u>mnavani@ucsd.edu</u>	Wednesdays 6:30 - 7:30 pm @ Sun God Lounge
Victor Shih	vbshih@ucsd.edu	Mondays 1:30 - 2:30 pm @ Dlush (Price Center)
Brian Tieu	<u>bptieu@ucsd.edu</u>	Wednesdays 11:30 am - 12:30 pm @ Price Theater

#### **Discussion section times and locations:**

Section Time		Location	IA
A01 Mon 4:00 - 4:50 pm		HSS 2154	Mili Navani
A02	Mon 5:00 – 5:50 pm	HSS 2154	Mili Navani
A03	Mon 6:00 – 6:50 pm	HSS 2154	Dieter Lam
A04 Mon 7:00 – 7:50 pm		HSS 2154	Dieter Lam
A05	Wed 5:00 – 5:50 pm	HSS 2154	Tiffany Gee
A06	Wed 6:00 – 6:50 pm	HSS 2154	Teresa Chen
A07	Wed 7:00 – 7:50 pm	HSS 2154	Victor Contreras
A08	Wed 8:00 – 8:50 pm	HSS 2154	Victor Contreras
A09	Fri 10:00 – 10:50 am	SOLIS 109	Tun Aung
A10	Fri 11:00 – 11:50 am	SOLIS 109	Brian Tieu
A11	CANCELLED	N/A	N/A
A12	CANCELLED	N/A	N/A
A13 Wed 2:00 – 2:50 pm		CENTR 201	Victor Shih

You are not required to attend section but you will find doing so helpful 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 April 6<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 <u>approximately 1 page</u> (it is okay if more than one page but please be concise). The questions will be posted on the website along with the due date (one week following the date assigned). A printed copy of your homework should be <u>submitted in class by the due date AND uploaded to Ted</u>. Be sure to provide references to the source material (primary literature) used to obtain your answers!

#### **Course Website**

The course Ted 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 finding 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:**

<u>Small Things Considered</u>: <u>http://schaechter.asmblog.org/schaechter/</u> (odds and ends from the microbial world) <u>Microbe wiki</u>: <u>http://microbewiki.kenyon.edu</u> (great resource for exploring a rich variety of microorganisms) PubMed: <u>http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?tool=cdl&holding=ucsdlib</u> (journal literature portal)

Week	Week Starting	Assignment
1	Mon Mar 30	No paper or homework the first week!
2	Mon Apr 06	No paper or homework the second week!
3	Mon Apr 13	Paper 1: "Halothermothrix genome"
4	Mon Apr 20	Homework 1 assigned
5	Mon Apr 27	Homework 1 DUE & MIDTERM EXAM on Thursday April 30 <sup>th</sup>
6	Mon May 04	No paper or homework this week!
7	Mon May 11	Paper 2: TBA
8	Mon May 18	No paper or homework this week!
9	Mon May 25	Paper 3: TBA plus Homework 2 assigned
10	Mon Jun 01	Homework 2 DUE

#### Assignment schedule at a glance...

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

<u>Familiarize yourself with related topics</u>: 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 <u>before</u> 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:**

<u>During the exam</u>: 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.

<u>After the exam</u>: Prepare a <u>written</u> 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, <u>all</u> of the exams will be re-graded using the new answer key.

The following deadlines apply for submitting a re-grade and will be strictly observed: <u>Midterm</u>, **Thursday May 21**; <u>Final</u> <u>exam</u>, **Friday June 19**.

#### \*\*\*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. <u>Plagiarism</u>, 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. <u>Collusion</u>, 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.