BIMM 120 Bacteriology

Spring 2011 ~ Professor Eric Allen ~ 108 Peterson Hall ~ Tues Thurs 3:30 – 4:50 pm

DATE	TOPIC	READINGS
	PART I: Fundamentals of Microbiology	
Tu Mar 29	1) Overview & Systematics of the Microbial World	Chapter 1 (1-10) & Chapter 14 (377-390)
Th Mar 31	2) Cell Structure Part I: Cell Walls and Membranes	Chapter 4 (66-86)
Tu Apr 05	3) Cell Structure Part II: Other Structures & Inclusions; Biofilms	Chapter 4 (86-106), Chapter 23 (677-680), & Chapter 6 (158)
Th Apr 07	4) Molecular Biology of Bacteria & Archaea	Chapter 7 (175-182; 189-194) & Chapter 8 (207-213)
Tu Apr 12	5) Microbial Differentiation, Regulation & Sensing	Chapter 9 (224-237; 242-246)
Th Apr 14	6) Genomics of Microorganisms	Chapter 13 (343-353; 355-360) Paper 1: TBA
Tu Apr 19	7) Mobile Genetic Elements & Lateral Gene Transfer	Chapter 11 (282-285; 294-303; 309-312) & Chapter 13 (360-364) *Homework 1 assigned*
Th Apr 21	8) Microbial Growth & Cell Cycle	Chapter 6 (141-157)
Tu Apr 26	9) Microbial Trophic Dynamics: Carbon & Energy	Chapter 5 (107-113; 114-122) *HW 1 due*
Th Apr 28	***** MIDTERM EXAM *****	---
	PART II: Microbes in the Environment	
Tu May 03	10) Metabolic Diversity I: Fermentation & Respiration	Chapter 5 (122-125) & Chapter 21 (613-618; 622-629; 631-635; 636-639)
Th May 05	11) Metabolic Diversity II: Photosynthesis & Other Autotrophies	Chapter 20 (578-595; 596-602; 605-608)
Tu May 10	12) Microbial Ecology I: Microbial Species & Evolution	Chapter 14 (367-374; 390-393) Paper 2: TBA
Th May 12	13) Microbial Ecology II: Microbial Biogeochemistry	Chapter 23 (673-677) & Chapter 24 (694-705)
Tu May 17	14) Extremophiles	Chapter 6 (157-171) & Chapter 23 (690-692)
Th May 19	15) Microbial Biotechnology	Chapter 25 (739-742) & Chapter 27 (806-808
Tu May 24	16) Metagenomics: Sampling the Unknown	Chapter 22 (658-662; 665-666) Paper 3: TBA *Homework 2 assigned*
Th May 26	17) Symbiosis & Commensalism	Chapter 24 (714-721; 725-730) & Chapter 28 (817-819)
Tu May 31	18) Pathogenesis I: Overview & Virulence Factors	Chapter 28 (822-834) *HW 2 due*
Th Jun 02	19) Pathogenesis II: Antibiotic resistance & Defenses	Chapter 27 (791-798; 802-809)
Mon Jun 06	***** FINAL EXAM 3:00 - 5:59 pm *****	---

Class website: http://webctweb.ucsd.edu/ (syllabus, lectures, reading notes, assigned papers, homeworks, etc.)

Textbook: "Brock Biology of Microorganisms" (12th ed., 2008) by Madigan, Martinko, Dunlap, & Clark

CONTACT INFORMATION

Professor Eric Allen
Email: eallen@ucsd.edu
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Office: 4170 Hubbs Hall (Scripps Institution of Oceanography campus)
Phone: (858)534-2570

SIO Shuttle: Pick up outside Peterson Hall – get off at SIO Library (white van; every 15 min)
Shuttle information: http://blink.ucsd.edu/Blink/External/Topics/Policy/0,1162,12960,00.html

TA	email	Office Hours	Location
Jenela Chow	jenela.chow@gmail.com	Wed 2:00 - 3:00 pm	Sun God Lounge
Anish Dhamija	adhamija@ucsd.edu	Fri 12:00 - 1:00 pm	2165 Muir Biology
Hao Doan	hdoan@ucsd.edu	Tue 5:00 - 6:00 pm	Sun God Lounge
Luis Esquivies	lesquivi@ucsd.edu	Wed 5:00 - 6:00 pm	2165 Muir Biology
Tiffany Hsiao	tihsiao@ucsd.edu	Mon 3:00 - 4: 00 pm	CLICS
Yuumi Miyazawa	ymiyazaw@ucsd.edu	Mon 6:30 - 7:30 pm	Peet's (Rimac Annex)
Alice Nguyen	atn011@ucsd.edu	Fri 4:00 - 5:00 pm	Café Roma
Bridget Whitney	bwhitney@ucsd.edu	Wed 10:00 - 11:00 am	Sun God Lounge
Lei Xu	l5xu@ucsd.edu	Thu 1:00 - 2:00 pm	Leichtag Building coffee cart

Discussion Section times and locations:

#	Time	Location	TA
A01	Mon 2:00 – 2:50 pm	York 4080A	Tiffany Hsiao
A02	Mon 3:00 – 3:50 pm	York 4080A	Yuumi Miyazawa
A03	Mon 4:00 – 4:50 pm	York 4080A	Tiffany Hsiao
A04	Mon 5:00 – 5:50 pm	York 4080A	Alice Nguyen
A05	Mon 6:00 – 6:50 pm	York 4080A	Alice Nguyen
A06	Tue 5:00 – 5:50 pm	U413	Luis Esquivies
A07	Tue 6:00 – 6:50 pm	U413	Luis Esquivies
A08	Wed 8:00 - 8:50 am	CENTR 203	Lei Xu
A09	Wed 9:00 - 9:50 am	CENTR 203	Bridget Whitney
A10	Wed 3:00 - 3:50 pm	CENTR 207	Anish Dhamija
A11	Wed 4:00 - 4:50 pm	CENTR 207	Hao Doan
A12	Fri 12:00 – 12:50 pm	HSS 2321	Jenela Chow
A13	Fri 1:00 – 1:50 pm	HSS 2321	Anish Dhamija

You are not required to attend section, but you will find doing so helpful, as the TA's will review class material, and discuss and answer questions about the papers. Sections will start the *second* week of class.

Exams and Final grade:
There will be one midterm (200 points), one final exam (200 points), and two written homework assignments (50 points each) – A total of 500 points are 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 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. In total, the answer(s) to each question should occupy no more than 1 page. 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 submitted in class by the due date AND uploaded to WebCT. Be sure to provide references to the source material (primary literature) used to obtain your answers to the questions, including web addresses and references to magazines or newspaper articles, if relevant.

Course Website
The course website contains additional, required readings (primary research papers & ancillary materials; these will be posted in .pdf format for your convenience) in addition to lectures 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 thus 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 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 Tuesday of the week indicated, and discussed further in your next section meeting. *Questions from the assigned papers will appear on the Midterm and Final.*

Useful websites:
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)
PubMed: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?tool=cdl&holding=ucsdlib (journal literature portal)

Assignment schedule at a glance...

Week	Week Starting	Assignment
1	Tu Mar 29	No paper or homework the first week!
2	Tu Apr 05	No paper or homework the second week!
3	Tu Apr 12	Paper 1: TBA
4	Tu Apr 19	Homework 1 assigned
5	Tu Apr 26	Homework 1 DUE MIDTERM EXAM on Thursday April 28th
6	Tu May 03	No paper or homework this week!
7	Tu May 10	Paper 2: TBA
8	Tu May 17	No paper or homework this week!
9	Tu May 24	Paper 3: TBA Homework 2 assigned
10	Tu May 31	Homework 2 DUE

General guidelines for reading the 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.

Attend lectures to hear the summary! Attend section to hear your TA's summary, and to ask questions!!

Try to answer the following questions as you read the 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 TA any questions you may have. If questions remain, attend either your TA's or Dr. Allen's office hours - we will try to clarify any outstanding questions.

To prepare for the exams:

1. Attend the lectures! *Most questions will come directly from the lectures.*
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 TA). *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 and pens to class! *We will explore the possible use of scantrons...but will let you know of the exam format well in advance.*
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 a TA for clarification. We will try to identify most ambiguities this way, so the grading key can be modified before the exams are graded.

After the exam: Prepare a ***written*** explanation, with documentation if possible (i.e. references to text), and deliver the query to your TA 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.

The following deadlines apply for submitting a re-grade and will be strictly observed: Midterm, **Tuesday May 17**; Final exam, **Friday June 17**.

***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.