

BIMM 120: Bacteriology - WINTER 2013 (SECTION ID 766024)

101 Center Hall - MWF 11:00 - 11:50 AM - INSTRUCTOR: DR. JAMES W. GOLDEN

BIMM 120. Bacteriology (4)

A discussion of the structure, growth, molecular genetics, and physiology of procaryotic (prokaryotic) microorganisms, with emphasis on the diverse activities of bacteria and on the interaction of various bacterial species with their environment. Three hours of lecture and one hour recitation. **Prerequisites:** Chem. 140A; Chem. 140B; BIBC 100 or BIBC 102 (may be taken concurrently).

Expanded Prerequisites: To do well in BIMM 120 you should have a strong background in general biology and organic chemistry. Two quarters/semesters of organic chemistry are important prerequisites. Students should know basic cell biology, molecular biology, and genetics. It is assumed that students know the basic structures and properties of major types of molecules found in cells. Students may need to study and review information on general and organic chemistry, and in parts of Chapters 4 and 5, which will not be specifically covered in class and which students should already know from their prerequisites. Students are individually responsible for any remedial learning required to understand the material presented in this course.

Class Schedule (approximate, topics will not exactly match class periods or weeks)

Readings from UCSD Custom Textbook (or Brock Biology of Microorganisms, 13th ed.): including text, figures & figure legends, tables, and sidebars.

WEEK/DATE	LECTURE NUMBER & TOPIC	READINGS
1	Overview of microbiology & bacteria	Chapter 1
1	Microscopy and basic cell structure	Chapter 2
2	Cell structure	Chapter 3
2	Cell structure	Chapter 3
3	Nutrition & Metabolism	Chapter 4
3	Growth	Chapter 5
4	Molecular biology of bacteria & archaea	Chapter 6; 7.1-7.4
W, Jan 30	MIDTERM EXAM 1	30 questions
4	Regulation of gene expression	Chapter 8
5	Bacterial viruses (phage)	Chapter 9.1-9.10
5	Bacterial genetics	Chapter 10
F, Feb 8	Homework 1 due	
6	Bacterial genetic engineering	Chapter 11
6	Bacterial genomics	Chapter 12
7	Metabolic diversity	Chapter 13
7	Metabolic diversity	Chapter 14
W, Feb 27	MIDTERM EXAM 2	30 questions
8	Industrial microbiology & Biotechnology	Chapter 15
9	Bacterial Evolution, systematics, ecology	Chapter 16 & 17 (22)
F, Mar 8	Homework 2 due	
10	Microbial growth control	Chapter 18 (26)
10	Microbial interactions with humans	Chapter 19 (27)
M, Mar 18	FINAL EXAM 11:30 AM-2:29 PM, ROOM?	20 QUESTIONS ON NEW MATERIAL + 40 QUESTIONS COMPREHENSIVE

Lectures: The lectures contain additional information that is not in lecture slides, and it is important to attend the lectures or listen to the podcasts. Because this is a very large lecture class, minimizing distractions is important. Please have respect for your classmates and the Instructor by turning off or silencing cell phones and by not talking, and minimizing other distracting activities in class.

Class web site: Ted at <https://ted.ucsd.edu/>

The class web site contains links to the syllabus, lecture presentations, old exams, assigned research papers, and might be used for submitting homework assignments. The Discussions tool is monitored by TAs but not necessarily by the Instructor unless a TA reports a problem that needs to be addressed.

Required textbook: UCSD Bookstore: BIMM 120 Custom: Brock Biology Of Microorganisms. OR "Brock Biology of Microorganisms" (13th ed.) by Madigan, Martinko, Stahl, and Clark. (Either textbook is okay.) Several copies of the textbook will be available on reserve at the Biomedical Library.

Optional: Textbook web site: <http://www.microbiologyplace.com/>

The textbook web site has various study tools, such as animations, quizzes, and flashcards, and is a good learning resource that some students find very useful.

Audio & Video of lectures: <http://podcast.ucsd.edu/>

Microbiology related websites:

ASM, American Society for Microbiology: <http://www.asm.org/>

Microbe wiki: <http://microbewiki.kenyon.edu/>

Instructor

Dr. James W. Golden

Email: jwgolden@ucsd.edu (For official correspondence. Course content questions should be asked in TA discussion sections or TA office hours, or at the Instructor's office hours.)

Office hours: after class; or Thursdays, 9:00-10:00 AM in 4832 AP&M (or 4882 AP&M conference room); or by appointment (just call or send email with a few suggested times to meet)

Office: 4832 AP&M (Applied Physics & Mathematics); Phone: (858) 246-0643

Teaching Assistants (TAs)

TA Name	Email	Office Hour	Location
Abraham, Aditi Mary	a2abraha@ucsd.edu	W 2:00 - 3:00 PM	Perks
Chen, Pin-Wen	pic004@ucsd.edu	Th 5:00 - 6:00 PM	Hi Thai
Heald, Jason Nicholas	jheald@ucsd.edu	Tu 1:00 - 2:00 PM	Café Roma
Khorsand, Mohammad Reza	mkhorsan@ucsd.edu	M 3:00 - 4:00 PM	AP&M 4882
Lin, Yullee Lih-Yih	yllin@ucsd.edu	Tu 2:00 - 3:00 PM	Muir Biology 2165
Szewczyk, Paul R.	pszewczyk@ucsd.edu	W 5:00 - 6:00 PM	Skaggs Pharm 4157
Vu, Kim Ngoc	k4vu@ucsd.edu	W 12:00 - 1:00 PM	MTF 416

Students must sign up for a Discussion Section at <http://sections.ucsd.edu/overview.shtml>

Discussion Section times and locations: (Sections start the second week of classes)

#	Day & Time	Location	TA Name
A01	Canceled		
A02	TBA		
A03	M 2:00 - 2:50 PM	SEQUO 148	Khorsand, Mohammad Reza
A04	Canceled		
A05	M 4:00 - 4:50 PM	SEQUO 148	Heald, Jason Nicholas
A06	M 5:00 - 5:50 PM	SEQUO 148	Chen, Pin-Wen
A07	M 6:00 - 6:50 PM	SEQUO 148	Szewczyk, Paul R.

SYLLABUS

1/7/2013

A08	W 4:00 - 4:50 PM	U413 2	Lin, Yullee Lih-Yih
A09	W 5:00 - 5:50 PM	U413 2	Abraham, Aditi Mary
A10	W 6:00 - 6:50 PM	U413 2	Abraham, Aditi Mary
A11	W 7:00 - 7:50 PM	U413 2	Szewczyk, Paul R.
A12	F 12:00 - 12:50 PM	WLH 2113	Vu, Kim Ngoc
A13	F 1:00 - 1:50 PM	WLH 2113	Vu, Kim Ngoc

All questions about course material, exam preparation, homework assignments, etc. should be asked at TA discussion sections and office hours. Attending a discussion section each week is *highly recommended*, but is not required. TA's will answer questions, review class material, review for exams, and discuss and answer questions about the homework assignments. Students must sign up for a discussion section online and should normally attend that section, but may attend any discussion section or TA office hour if space is available.

Exams and final course grade:

There will be two midterm exams (30 questions, 60 points each), one final exam (60 questions, 120 points), and two written homework assignments (10 points each). Exams will be multiple-choice. The total points possible is 260. Most exam questions will require an *integrated understanding* of the material, not just memorization of facts. Final grades will be based on the percentage of total points for the midterms, the final, and the homework assignments. There are no extra-credit assignments.

There are NO scheduled make-up exams. Make-up exams are decided case-by-case and require a written university-authorized excuse signed by the student. Make-up exams may be an oral or essay exam administered by the Instructor or a TA. If you miss an exam, you **must contact the Instructor within 24 hours** of the missed exam to determine if you are eligible for scheduling a make-up exam. Missing the final exam will result in an incomplete grade.

The minimum grade earned for the course will be based on a straight scale of the percentage of total possible points ($\text{points earned} / 260 \times 100$ rounded to nearest 0.01%) with cutoffs as shown below. For example, the computer will assign a B+ grade to a percentage of 89.99, and an A- grade for 90.00. Grades **cannot** be changed for individual students for any reason. To be fair to all, the instructor **cannot** deviate from the syllabus for an individual student. If you have what you consider extraordinary circumstances that deserve special consideration, then you should contact an academic advisor in your college.

A+	A	A-	B+	B	B-	C+	C	C-	D	F
97	93	90	87	83	80	77	73	70	60	<60

The class average for this course is typically a B-/C+, and the final grades will be assigned with an appropriate adjustment or "curve" if necessary. The grade scale adjustment is not made until after the final exam scores and all other scores are available, and cannot be predicted before then. In the past, the "curve", if any, has been very small, especially for the A & B grades.

The instructor must be completely fair to ALL students in the class and **cannot** under any circumstance give special consideration to an individual student. You will receive the grade that you have earned with no exceptions. There are always students who just miss a higher grade at each cutoff score. In this very competitive course, you can be sure that no student above the cutoff wants me to lower the cutoff to allow more students to get a higher grade--students have told me that very clearly.

Exams:

Enter the classroom and FILL IN **ALL SEATS FROM THE FRONT OF THE ROOM**. You must bring your **student ID** and a **#2 pencil** and **eraser**. Scantron exam forms will be provided. **No** calculators, phones, or other electronic devices are required or allowed, and **no** hats or hoods. ALL personal items must be **CLOSED**

and placed on the floor UNDER your seat or at the front of the room. Make sure your phone is turned **OFF** and put away. Once you leave the room, you may NOT return to the room until the exam is over.

Each exam will consist of multiple-choice questions, and will include questions taken from the lecture AND the textbook or other assigned readings. Always choose the *BEST* answer even though it might not be perfect. There should be *one best* answer for each question. For the midterm exams only, the exam key will be posted on Ted, usually within 24 hours after the exam.

Do not cheat! *Disciplinary steps will be taken when cheating is discovered. These steps will include failing the exam, and therefore the course, and being reported to the appropriate university authorities.*

During the exam: If you are sure that a question is written ambiguously or feel that more than one answer is correct, raise your hand and ask for clarification. Most ambiguities and problem questions should be identified this way, so that clarifications can be made to the entire class and so that the grading key can be modified before the exams are graded. The TAs cannot define words or help you understand a question.

After the midterm exams only: If you are sure that the exam key is clearly wrong, then, within **24 hours** after the key is posted, prepare a written explanation, with documentation (reference the textbook page and section), 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.* All inquiries will be carefully considered and forwarded to the course Instructor if they might be valid, and then the exam key will be modified if required. Discussion of inquiries about exam questions is done only at office hours and not by email.

If we find that a question has more than one answer or should be discarded after the exams have been graded, then all of the exams will be re-graded using the corrected answer key. In over 20 years I have never had errors made by the scantron service, however, if you are sure that something must be wrong with your score, then discuss your concern with the Instructor.

How to study and prepare for the exams:

1. Attend lectures or listen to the podcasts! Most exam questions will be on topics and information presented in lecture; however, related textbook readings are required to fully understand the material. A few questions will come from the assigned textbook readings or homework assignments, even if the material was not covered in lecture.
2. Read the related material in the textbook. These readings will reinforce the lectures and provide information that is necessary to understand and integrate the information provided in lecture.
3. As necessary, review textbook sections or other sources that provide review/remedial material that you were expected to have learned in prerequisite courses.
4. Attend discussion section regularly, as you will be able to ask questions about the lectures and readings.
5. Study the textbook MiniQuizzes, Big Ideas, Review of Key Terms, Review Questions, and Application Questions.
6. Use the textbook web site to better understand the material.

In past years, the students who do best regularly attended lectures and discussion sections, read the textbook, and reviewed their class notes each week.

Homework (HW) written assignments (Posted on Ted, 10 points each):

Scientific research articles, also called "papers", are the basis for scientific progress and information exchange, and for the information in textbooks and science classes. Scientists use scientific methods and logic to obtain data that are presented in these papers. These published ideas, methods, data, and conclusions can be critically analyzed by other scientists who can then repeat and extend the original results. For students, reading scientific articles is important to understand the scientific method and the source of the information you are learning.

For the homework assignments, you should read the whole paper. (At least one question on the Final Exam will be related to each of the homework papers.) You will be given a few questions, posted on Ted, related to the research article (also posted on Ted) and asked to write a short answer for each question. The answer(s) to the question(s) should be single-spaced, 1 inch margins, 11 pt Arial or equivalent, and occupy no more than **1 side of 1 page**, total. The page must have your **name**, **PID**, and **signature**. You should use a spelling and grammar checker. The TAs can help you understand the papers at discussion sections and office hours, but they **CANNOT** pre-grade answers or help you with your specific answers. On or before the due date, a signed **PRINTOUT** of your homework answers (1 side of 1 page, total) should be turned in at lecture or at your TA discussion section or office hour. The printed answer page will be graded by the TAs and must have your name, PID, and signature, which is your assurance that your answers are your own work.

Although the research articles may be discussed in TA discussion sections and with your classmates, you must write your own homework answers independently. It is expected that you may need to look up additional information in textbooks or on the web to understand the research articles, but all answers must be in your own words. Do not copy or plagiarize the article or any other source in your answers. By submitting a homework assignment, you are certifying that it is exclusively your own work. Homework answers may be checked by Turnitin.com.

HW grading will be done with a rubric/key developed by the Instructor and TAs, and by comparison to the best student homework answers to achieve consistent and fair scores for all students. All aspects of the answers, including logical presentation and spelling/grammar will be considered for your score. Your answers may require a brief explanation of how or why the answer addresses the question. Points may be deducted for including information that is not related to the correct answer because this indicates a lack of understanding. Homework assignments will not be returned or re-graded. The TAs carefully assign scores for the homework answers, but are not asked to mark corrections or make annotations.

General guidelines for reading the papers:

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

Read the paper before attending a TA discussion section to hear your TA's summary of the paper and to ask questions about the paper. You are not expected to understand everything in these primary research articles, but you should pay attention to the following as you read the papers (again, the specific homework assignment will be posted on Ted):

1. Identify the questions being asked in the paper.

Frequently the introduction or the first few paragraphs will present background information and raise the questions that will be addressed in the paper.

2. Identify the main conclusions in the paper.

The main conclusions will be summarized in the abstract, and further presented in the discussion/conclusion section. Determine why the conclusions are important.

3. Examine the experiments that were performed to answer the questions.

The experiments and data will be briefly summarized in the abstract and will be presented in the Methods and Results sections of the paper.

4. For each experiment:

Determine how the experiment was done. (But you are not expected to understand all of the details in the methods.) Examine the data. Consider the author's conclusion about the experiments and decide if the conclusions are valid. Decide if proper controls samples or conditions were included. Consider any caveats or concerns raised by the authors about their data. Think about alternative conclusions or explanations for the data—maybe the authors are wrong!

Statement on Office for Students with Disabilities (OSD):

To receive accommodation, students must present their "Authorization for Accommodation" (AFA) form provided by the Office for Students with Disabilities (OSD) to the instructor.

Statement on Academic Integrity:

Integrity of scholarship is essential for an academic community. The University expects that both faculty and students will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned, without unauthorized aid of any kind. The consequences of being caught cheating can be severe.

Information can be found here:

<http://www.ucsd.edu/current-students/academics/academic-integrity/index.html>

Students are expected to do their own work, as outlined in the UCSD Policy on Integrity of Scholarship:

<http://students.ucsd.edu/academics/academic-integrity/policy.html>

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 or assignment, 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 or the source. Copying anything from any source is plagiarism if the source is not clearly cited. Plagiarism is stealing someone else's ideas and presenting them as your own.
3. **Collusion**, such as engaging in unauthorized collaboration on exams or assignments, completing for another student any part or the whole of an exam or assignment, or procuring, providing or accepting materials that contain questions or answers to an exam or assignment to be given at a subsequent time.