BIMM 120- Microbiology
Course Syllabus

Summer 2018 – Lectures, Tuesdays & Thursdays, 11:00AM-1:50 PM in Pepper Canyon Hall 109.

Instructor: Giorgia Pirino, Ph.D. Email: gpirino@ucsd.edu
Please include BIMM120, your name, and IA name in all emails to Dr. Pirino
Office: H&SS 1145F

Office Hours: Tuesdays, 2:30-3:30PM. Location: Court outside of Price Center Plaza. You are encouraged to take advantage of office hours. Please present your questions about course material in person during office hours, NOT by email.
I cannot guarantee an answer to your email, unless it is an urgent issue.
Office hours function as a relaxed forum to ask questions and discuss course content. Regular O*ffice Hours will start in week 2 (Tuesday, August 14th)*. We will also have virtual office hours.Virtual Office Hours are listed on page 6.
Virtual office hours are scheduled for Thursday, August 9th, from 8 to 9PM

Instructional Assistants:
Rachel To: r1to@ucsd.edu
Alex Scavo: ascavo@ucsd.edu

Discussion Sections/Office Hours - Time, Location & IA
Discussion 01: Tuesdays, 9:00 AM-10:50 AM in CENTR 201- Alex Scavo
Discussion 02: Wednesdays, 2:00 PM-3:50 PM in HSS 2321 - Rachel To
Discussion 03: Wednesdays, 4:00 PM-5:50 PM in HSS 2321 - Rachel To
Discussion 04: Thursday, 9:00 AM-10:50 AM in CENTR 201 - Alex Scavo
Discussion Sections will start on week 2.

COURSE DESCRIPTION: This is an introductory course in general microbiology designed for Biology majors. The overall themes of this course are: 1) microbial biology, biochemistry and genetics 2) microbial evolution and diversity, 3) interactions of microorganisms with humans and their environment. **Prerequisites:** BLD1 and BIBC 100 or BIBC 102 (the last two may be taken concurrently). This course will be available through podcast at podcast.ucsd.edu

Learning goals: At the end of the course students will be able to appreciate microbial diversity, understand microbial genetics, microbial metabolism. microbial evolution, how microbes regulate their genes, and how microbes interact with the environment.

Preparation and expectations: To do well in BIMM 120, students should have a strong background in general biology and organic chemistry. It is assumed that students know basic biochemistry (the major types of molecules found in cells, cell metabolism), as well as basic (introductory) cell biology, molecular biology, genetics, and the importance of scientific method. Although this is not a lab course, and no lab skills are required, it is expected that students know how a general biology research lab functions and how the scientific method is applied to research, based on information acquired in previous courses and scientific publications. Students should review this material before the start of the quarter or during the first week. We will not specifically cover these principles in class because students should already know this material from their prerequisites. Students are responsible for any remedial learning required to understand the material presented in this course.

Discussion Sections: Students may attend other discussion sections/IA office hours if space is available. You are encouraged to take advantage of discussion sections. Although they are *optional*, they represent a great opportunity to ask for clarification and discuss course content. IAs will review class material, answer questions, and review for exams. Students should normally attend the section they are registered for, but may attend other discussion sections/IA office hours, if space is available. However, since students will not be able to keep their midterm exams after they have been graded, students should come during the discussion section they are enrolled into to see their midterm exams. IAs will *only* bring exams of the students enrolled in that specific discussion. Othewise, students may make an appointment with their IA to see the midterm exams.

Textbook: "Microbiology, an evolving science, 4th edition" Foster & Slonczewski. If you have the 3rd edition, it is **ok**. Just make sure that the readings correspond, since I will refer to the 4th edition during lectures. If you are using a different textbook, make sure that the course topics are covered. Scientific articles to complement the textbook readings will be provided before the lectures.

You may choose one of the following options:

- Purchase the textbook from the campus bookstore. Includes: Book a la carte
- Purchase access to the eBook for $75 at http://books.wwnorton.com/books/webad-detail-editions.aspx?id=4294992872
- Purchase/rent the textbook via Amazon or other websites/bookstores.

A few copies of the textbook will be available on reserve at the Geisel Library as soon as the library locates them.

Final grade: Your final grade will be determined by the following assignments:

- Participation: 10 % of final grade (20 points) divided as followed:

-Class participation/iClickers 5% (10 points; 2 points per week).

-Discussion via Piazza 5% (10 points; 2 points per week). The Piazza page should work as a message board: students may post/answer questions on that page. This will provide instant clarification to the entire class. Students who participate **actively** to the class' Piazza page receive points that will count toward the final grade. Active participation includes, but is not limited to, posting comments, scientific articles, answering questions posted by other classmates, etc.

- Homework: 10% of final grade (20 points)

- Exams: 80 % of final grade (160 points):
  - Midterm Exam: the best of the two midterm exams' scores (70 points) will count toward the final grade
  - Final Exam: 90 points

  Total points available: 200 points (100%)

Extra credit: Concept videos (see page 8)

Grading scale: Please assume this class is NOT curved and use the raw score (rounded up to nearest 0.01%) that you receive to calculate your grades.

For example, <60/100 is a F; <70/100 is a D; 70/100 is a 70 or C-; 73/100 is a 73 or C; 78.5/100 is a 78.5 or a C+; 80/100 is an 80 or B-; 83/100 is an 83 or a B; 88.5/100 is an 88.5 or B+; 90/100 is a 90 or A-; 93/100 is a 93 or A.

Examinations: We will have 2 midterm exams and 1 final exam: 1) Midterm Exam 1 – August 16, 2018 (lecturers 1-2, including readings); 2) Midterm Exam 2 - August 28, 2018 (Lectures 3-4, including readings; concept video 1); 3) Final Exam September 8, 2018 (lectures 5-7 including readings; ; concept video 2); Midterm Exams will be held during class time. The final Exam will be held in a TBA location. Exams are **not** cumulative.

Review Section for Final Exam: Thursday, September 6, from 11AM to 12:15PM in Pepper Canyon Hall 109. Final office hours will be on Thursday, September 6, from 12:45PM to 2PM outside of Price Center Plaza.

Make-up Exams: *There are no make-up exams*. No exceptions! However, considering that unforeseen circumstances may cause a student to miss an exam or not to perform well in one exam, the lowest score received in one of the 2 midterm exams will be dropped. Only one of the two midterm exams (the one with the highest score) and the final exam will count toward the final grade. *The final exam cannot be rescheduled or its grade substituted with a midterm score for any reason. In case of a dare emergency, please contact the instructor within 24 hours. After review by the instructor, the student may take a different exam as a substitution; most likely it will consist in an oral exam.* If you have a job/graduate school/medical school interview, schedule it on a non exam day; interviews are not considered dare emergencies. Personal commitments/conflicts are also not considered dare emergencies.

Exams: Exams will consist in short answer, true/false, fill in the blank, and multiple choice questions. Regrade policy for the exams are discussed under the folder "Regrade Policy" on TritonEd. Please read the entire regrade policy before submitting a regrade request.
You must bring your **student ID** and a **pen (no pencil, if you like to have a regrade)**. Only exams written in nonerasible pen will be considered for regrades, and white-out may not be present on such exams (see regrade policy). **No** calculators, phones, smart watches, or other electronic devices are required or allowed. ALL personal items must be **CLOSED** and placed in front of the classroom. Make sure your phone is turned **OFF** and put away. Students may not use the restroom during exams.

During the exam: If you are sure that a question is written ambiguously, raise your hand and ask for clarification. Most ambiguities and problem questions should be identified this way, so that clarifications can be announced to the entire class and so that the grading key can be modified before the exams are graded. Exams will use scientific language, make sure that you are familiar with scientific terms. IAs *cannot* define scientific words, help you understand a question, or confirm that you have chosen the correct answer.

Class Participation in an Inclusive Learning Environment: Participation in class is very important. The classroom should be active all week, not just during class hours. Student class participation should incorporate responses to their peers, their opinions, pertinent information regarding subjects covered in class, from things that students have read, and examples from their experience. The distinguishing feature of a well done class discussion might include an objective and critical analysis of lecture notes, reading assignments and what you have experienced. In the spirit of scholarly discussion, the instructor expects responses and viewpoints that agree and

disagree with others as long as they apply to the topic and are respectful. In our learning model, the heart of active learning occurs through discussions that help students test their ideas, reinforce what they have learned, and share resources with others in the class. We will discuss several topics during lectures and students will have time to discuss them with their classmates first and then with the rest of the class. During our time together I will provide the structure for an inclusive learning environment by implementing best practices from social, cognitive and learning research. It is important that you contribute to this by participating in group work, helping your peers and being respectful of other students and all faculty members. Try working with others you don't know. Don't dominate conversations or questions and answer time. Give your peers time to think before just providing them with your answer!

Occasionally I will call students during class to share their groups' discussions with the class on a specific topic. *Students should seat next to the same classmates during lecture to facilitate discussion.* Class participation points will be assigned via 3 ways: iClickers, class discussion, and Piazza (see below).

To receive points for class participation, students should answer iClickers questions, share their opinions within the group and occasionally within the class, and participate in the class' Piazza group.

iClickers/Class Discussion: To facilitate class discussion, we will use iClickers during lecture. Students will receive points for clicking, NOT for giving a correct answer.

We will start recording iClickers participation in week 1 (second meeting of the course). However, we will practice with iClickers during the first lecture (Tuesday, August 6th). iClickers are available for purchase at the UCSD bookstore. Once you have purchased your Clicker, you can register it on TritonEd – go to the tools section and look for the iClicker registration link. I strongly recommend the i>Clicker 2 as it is very convenient. Older versions of i>Clicker are acceptable if you already have one, but you may need to reset your clicker every time it goes into sleep mode. **Do NOT count on sharing a clicker with another student in the same quarter as the software only records scores for one student, even if both of you are in different classes. After registration, your iClicker is linked to your name on the class roster. Therefore, sharing iClickers is illegal.**

Participation will also be evaluating via class discussion. Students will receive points for discussing topics with other classmates, using the think-pair-share method. In the spirit of scholarly discussion, the instructor expects responses and viewpoints that agree and disagree with others as long as they apply to the topic and are respectful. In our learning model, the heart of active learning occurs through discussions that help students test their ideas, reinforce what they have learned, and share resources with others in the class. Students who participate in class

discussion together with iClickers (points for clicking, not for correct answers) and are present for 85% of the lectures will receive full credit. *During class, some questions may be asked through iClickers and, most of the times, will expand through a group discussion.*

Piazza page: Our Piazza page should work as a message board: students may post/answer questions on that page. Students who have a specific question about the course/course material are encourage to post it on the Piazza page. Other students may wonder the same and the answers will provide an instant clarification to the entire class without misunderstandings. Students who participate **actively** to the class' discussion page receive points that will count toward the final grade. Active participation includes, but is not limited to, posting comments, answering questions posted by other classmates, posting scientific articles, etc. during the entire course. Just liking a post or agreeing with someone else's post does not qualify for participation points. Students receive points at the end of each week (starting week 1; max 2 points per week (from Sunday to Saturday of the same week, total of 10 points) and will be added at the end to generate the final grade for Piazza participation. To sign up:
piazza.com/ucsd/summer2018/bimm120
I suggest you to download the Piazza app so you can be more engaged and receive participation points easily.

Virtual Office Hours: Every Thursday Dr. Pirino will hold 1 hour of virtual office hours through Google Handouts (from 8 to 9PM). Instructions will be provided in class.

Homework/survey: Students enrolled in BIMM120 will complete 3 homework/surveys assigned in advance by the instructor. Homework will be completed via the course website on TritonEd (more information will be provided later). Students are required to bring the answers to their homework to the following class period or when instructed. The answers will be used for class discussion.

Extra Credit: Students enrolled in BIMM120 may make 2 videos on specific topics assigned by the instructor one week in advance (see tentative schedule on page 9). After the deadline, the entire class will have few days to watch the videos, and related questions will be asked during exams. Students who make both videos will receive extra credit points (4 points; extra 2% of final grade). To receive 4 points students must make **BOTH** 2 videos as a group. No extra credit will be given to students who do not make concept videos (no points for watching only) or make only 1 video or make a video/s by him/herself. **If interested on the video preparation**, **please sign up by adding your name to one of the concept videos groups on TritonED by Friday of**

week 1 at 11:59 PM. No further requests will be accepted after the deadline. Sign up sheet will open at 2PM of August 6th. ***Think twice before enrolling in this extra credit activity. Students who signed up and then decide not to do the videos will receive -1 point, since their negligence will jeopardize other students' performance.***

Instructions to sign up:

1) Go to "Tools" from the left of your TritonEd page,

2) Go to "Groups" from the right of your TritonEd page.

3) Open one of the groups (students already enrolled are shown as well as space available in each group)

4) Sign up by adding your name to one of the groups, following the instructions.

Students who like to be in the same group should sign up to the same group on TritonEd. Groups can have up to 4 members. If at the end a group has 3 members, it is OK. If a group has only 1 or 2 members, groups will be combined. Instructions on how to upload videos will be provided later in the course. Videos must be uploaded by the deadlines specified in the course schedule (see last page of this document).

Regrade Requests: All regrade requests should be submitted in writing (either by email or giving them to Dr. Pirino or IAs) *within 5 days* of receiving the graded material (aka, the day that graded exams are brought to discussion sections). Please check the regrade policy on TritonEd for more information.

Scientific articles: We will read several articles throughout the course and they are fair game for the exams, unless otherwise instructed . As you read the scientific papers, focus on the big picture and look for the following points:

1. What were the main goals this paper? What was/were the hypothesis/es?
2. What experiments were performed to test the hypothesis/es?
3. Did the results confirm or refute the hypothesis/es?
4. What were the main conclusions of the paper?

If there is something that you do not understand, skip it temporarily, you can return to it later.

Statement on Office for Students with Disabilities (OSD): To receive accommodation, students must present or email their "Authorization for Accommodation" (AFA) form provided by the Office for Students with Disabilities (OSD) to the instructor. Extended exam times will overlap with the regular exams and usually start at the same time as the regular exams. If OSD exam times for this course conflict with another class, then this course should not be taken. It is the student's responsibility to make sure class and exam schedules for all of their classes do not have any conflicts.

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://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2
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. All class material, such as syllabus, readings, homework, scientific articles, lecture slides, etc. are copyrighted and cannot be posted to websites and/or distributed without instructor's approval for any reason.

Academic misconduct includes but is not limited to:

1. **Cheating**, such as using "crib notes", copying answers from another student during the exam, or forge assignments.
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.

Electronic Devices: Textbooks, notes, cell phones, pagers, laptop computers, smartwatches, and all other electronic devices must be off and stored out of sight during exams. The use of these devices during an exam is considered an act of academic dishonesty and will be dealt with accordingly. Also, during class students cannot surf the web, use their cell phones, or do anything not related to the class.

Tips on how to succeed in the exams and in the course *(with suggestions from Dr. Dirks* and scientific articles to back up those claims):*

1) Please use lecture slides as a guide to know what to focus on.

2) If a topic has been covered in lecture giving you more information than the ones discussed in the textbook, it is expected that you to know that. If something has been emphasized, it is important.

3) Readings as well as scientific articles discussed in class and/or discussion sections are fair game for the exams. However, if the textbook contains more topics than the ones covered in lecture or homework, you are not responsible for those.

4) For each lecture learning outcomes will be provided and they represent an excellent study guide to see what to focus on while studying

5) Participate and engage in discussions with your classmates and instructors both in class and outside of class.

Active learning increases student performance in science, engineering, and mathematics. Freeman, S. et al. PNAS June 10, 2014. 111 (23) 8410- 8415;

Smith, M. et al. Why Peer Discussion Improves Student Performance on In-Class Concept Questions. Science, 2009 January, 2. Vol. 323

6) Study a little bit every day; when studying, try to make connections and apply concepts to hypothetical situations. Take hand-written notes, pens are better than computer to create the neural pathway to retrieve information*. Answer questions that have been asked during lecture, make your own questions as they were an exam; go to instructor's office hours and IAs' discussion sections/office hours.

The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking - Pam A. Mueller, Daniel M. Oppenheimer, 2014. Psychological Science, 25(6), 1159-1168.

The Power of the Doodle: Improve Your Focus and Memory: Research Shows That Doodling Helps People Stay Focused, Grasp New Concepts and Retain Information. By Sue Shellenbarger; Updated July 29, 2014 7:38 p.m. ET
https://www.wsj.com/articles/the-power-of-the-doodle-improve-your-focus-and-memory-1406675744

A powerful way to improve learning and memory: Practicing retrieval enhances long-term, meaningful learning. Jeffrey D. Karpicke. Psychological Science Agenda | June 2016 http://www.apa.org/science/about/psa/2016/06/learning-memory.aspx

7) Do not wait until the day before an exam to study: it won't work. Never, ever, ever cram. Bad. Cramming is bad. You need to space out learning*.

Using Spacing to Enhance Diverse Forms of Learning: Review of Recent Research and Implications for Instruction. Carpenter et al. Educational Psychology Review 24(3):369–378. September 2012.

8) After studying a topic, take a break, go for a walk. Return to your studies, but study a new topic. Then return to the previous one. Interleave the content so that you forget what weakly set into your memory. If you are learning material that requires memorization then you need to mix it up. Forgetting helps you remember. The next time you learn it you will learn it better and for long-term*.

See J. D. Karpicke. Ref below. http://www.apa.org/science/about/psa/2016/06/learning-memory.aspx

The Critical Importance of Retrieval--and Spacing--for Learning. Soderstrom NC, Kerr TK, Bjork RA. Psychol Sci. 2016 Feb;27(2):223-30.

Learning concepts and categories: is spacing the "enemy of induction?" Kornell N1, Bjork RA. Psychol Sci. 2008 Jun;19(6):585-92. doi: 10.1111/j.1467-9280.2008.02127.x.

8) Have fun: You are here for a reason and although it is challenging you should make the most of your time in college. Learn as much as you can. Put effort into your work and it will pay off*.

Tentative Schedule **

* *Changes to the course syllabus will be announced in class

CLASS/ LECTURES	DATE	Lecture Topic	Homework***	Concept Videos
1	08/07/2018	Introduction to the course & Microbial Evolution		
2	08/09/2018	Microbial Cell Structures & Functions		
3	08/14/2018	Microbial Genetics & Biotechnology	**Homework 1 due by Monday, Aug 13th, at 10:00AM**	**Concept Video 1 announced**
	08/16/2018	**Midterm Exam 1**		
4	08/21/2018	Microbial gene regulation	**Homework 2 due by Tuesday, Aug 21st, at 8:00AM**	**Concept Video 1 due**
5	08/23/2018	Microbial gene regulation & Metabolism		
	08/28/2018	**Midterm Exam 2**		**Concept Video 2 announced**
6	08/30/2018	Metabolism & Guest lecture		
7	09/04/2018	Microbial Growth & Bacteriophages	**Homework 3 due by Tuesday, Sep 4th, at 11:59PM**	**Concept Video 2 due**
	09/06/2018	Final review		
	09/08/2018	**Final Exam**		

* ** Homework/survey schedule will be updated throughout the course
See Reading Schedule on TritonEd for specific readings highly recommended for each lecture.