

BIMM 194: Adv Topics - Microbiology, fall 2018

W 5:00 PM – 6:20 PM; YORK 3010; Instructor: Dr. James W. Golden

BIMM 194. Microbiology (2)

This class will cover current topics in microbiology with a focus on bacteria. Topics will be selected from current review articles and could include areas such as molecular mechanisms of bacterial cell biology; genetics and evolution of traits such as antibiotic resistance; bacterial interactions such as biofilms, symbiosis, or pathogenesis; and microbial biotechnology.

Prerequisites: Molecular Biology (BIMM 100); upper division standing.

Class Schedule

Week – Date	Class Topic	Reading
1 – 10/3	Course introduction, Review of Microbiology	None
2 – 10/10	Review paper: bacterial development	Cyanobacterial Heterocysts
3 – 10/17	Research paper: heterocyst morphological development	ABC Transporter Components HgdB and HgdC...
4 – 10/24	Review paper: antibiotic resistance	SnapShot: Antibiotic Resistance, and Evolution of Plasmid-Mediated Antibiotic Resistance...
5 – 10/31	Research paper: new antibiotics	Culture-independent discovery of the malacidins ...
6 – 11/7	Review paper: bacterial pathogenesis	Protein-Injection Machines in Bacteria
7 – 11/14	Research paper: bacterial recognition of host	Host cell attachment elicits posttranscriptional regulation...
8 – 11/21	Homework due. Class does not meet, Thanksgiving	Homework assignment research
9 – 11/28	Review paper: microbial biotechnology	Synthetic biology of cyanobacteria
10 – 12/5	Research paper: engineering production in specialized cells	Enhancing Light-Driven 1,3-Propanediol Production ...

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Office hours: after each class for 10-15 minutes; or by appointment (just call or send email with a few suggested times to meet)

Class Meetings: Attendance at each scheduled class is **required** and is part of your grade. You will **sign in** at each class with your signature. Classes will be interactive with participation by everyone in the class.

Class web site: TritonEd at <https://triton.ed.ucsd.edu/>

The "**Content**" section contains pdf files for the syllabus and for the assigned review and research papers. You may also download the assigned papers directly from the publisher for **free**, but only from on-campus or by using VNP. **Quizzes** may be on TritonEd or taken on paper at the beginning of class and will be **graded** to help make sure that each student is **prepared to discuss** the assigned reading in class.

Grades:

Attendance is required and receives 10 points for each class (100 points total, including 10 points for Thanksgiving).

Participation in discussions is required and receives 5 points for each class (50 points total, including 5 points for Thanksgiving). Student are expected to volunteer, and will be called on, to discuss or answer questions about the assigned reading.

There will be **8 quizzes** with 5 questions each worth 1 point each for a total of 5 points per quiz (40 points total). Quizzes will be taken at **the beginning of class (easier, closed book)**, or on **TritonEd (harder open book)** during a **24-hour** period before each class. Each student is required to take the quizzes **independently** with **no** input or collusion with others.

Homework assignment. There will be 1 **homework assignment** worth 10 points and due by 11:59 PM on November 21.

Final grades will be based on attendance, participation, the 8 quizzes, and the homework assignment.

There are **no** extra-credit assignments or make-up quizzes.

The final grade earned for the course will be based on the total points possible, which is $10 \times 10 + 10 \times 5 + 8 \times 5 + 10 = 200$. Missing 1 class means a loss of 20 points.

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Score	193	180	177	170	163	156	149	142	135	128	<128

If a class is **unavoidably** missed because of circumstances beyond the student's control, then the student must submit a **signed** written excuse sent from their @ucsd.edu email address with an explanation of the circumstances **within 24 hours** of the missed class.

Homework (HW) written assignment (10 points):

For the homework assignment, you will **find and research** a microbiology topic that you personally find fascinating and then **write** a minimum of **3 paragraphs: one or two paragraphs** summarizing the topic and current knowledge, **one or two paragraphs** stating where you think the topic is heading in the future, and **one or two paragraphs** stating why you think the topic is awesome. You may include links to your sources at the end of the assignment. The HW should be **submitted as a .doc, .docx, or .pdf file**. You should use a spelling and grammar checker and proofread your final assignment. The homework assignment should be **uploaded to TritonEd by 11:59 PM on November 21**. You must **write your own HW independently and in your own words**. Do **not** copy or plagiarize the article or any other source in your assignment. By submitting a homework assignment, you are certifying that it is exclusively your own work. You can discuss topics with others, but **I expect all HW topics to be different from each other**. Homework assignments will be automatically checked by Turnitin.com.

General guidelines for reading the papers:

Research papers are written for people who already know something about the subject matter. You will need to look up information to understand the paper. You are not expected to understand everything in the reviews and primary research articles, but you should pay attention to the following:

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 are 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. What was the questions the experiments were trying to

address? What was the experimental design? How was the experiment done? What do the results mean? Did the experiment actually answer the question or not?

4. For each experiment:

Determine how the experiment was done. Examine the data. Consider the author's conclusion about the experiments and decide if the conclusions are valid. Decide if proper **experimental controls** 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!

Google "How to Read and Understand a Scientific Paper"

For example:

[How to Read and Comprehend Scientific Research Articles - YouTube](#)

<https://www.youtube.com/watch?v=t2K6mJkSWoA>

How to Read and Understand a Scientific Paper: A Step-by-Step Guide for Non-Scientists

https://www.huffingtonpost.com/jennifer-raff/how-to-read-and-understand-a-scientific-paper_b_5501628.html

Microbiology related websites:

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

Microbe wiki: <https://microbewiki.kenyon.edu/index.php/MicrobeWiki>

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. 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. (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.