

**BISC 579 – Advanced topics in Biology**  
**BACTERIAL BIOFILMS IN DISEASE AND NATURE**

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*Email is the best way to reach me and I'll generally reply quickly, provide that it's clear who the email is from and it's a coherent message. You can also stop by my office or research lab – I'm usually around.*

**Course Title and Description:** Advanced topics in Biology (BISC 579) – Bacterial Biofilms in Disease and Nature. Credit: 1 hour. A discussion class on the importance of biofilms in microbiology. Emphasis will be on the significance of biofilm growth in natural systems and on recent findings on the role that biofilms play in disease. There are no official prerequisites, but a background in microbiology (such as having passed BISC 333 with a C or higher) is recommended.

**Aims and/or Purpose of the Course:** To give advanced biology undergraduates and graduate students an introduction to the importance of biofilms in various systems.

**Course Objectives/Learning Outcomes:** 1. To introduce concepts of biofilm microbiology. 2. To review classic papers and commentaries on bacterial biofilms in order to instill a knowledge of the biofilm literature. 3. To survey current concepts on the roles of bacterial biofilms in pathogenic and natural systems.

**Course materials:** There is no required text for this course. There will be a number of assigned readings (typically one long or two short papers per week) which will be from the scientific literature. These will be a combination of review/synthesis papers and some primary scientific articles. Typically, I'll post a pdf on Blackboard which you will be required to print, read, and bring to class in order to participate in the class discussion.

I will generally select papers that address broad concepts and shouldn't require much more knowledge than material covered in an introductory microbiology course. If you've forgotten much of that material or you feel that your background in microbiology is a little weak, you might want to be prepared to read around a topic a little (either through online sources or in a microbiology text).

**Attendance:** Attendance at all classes is required to maintain a good grade. A large part of your grade in this course is dependent upon class participation – both in general class discussions and when it's your turn to lead a class discussion. If you miss a class, you will lose the points for that week. Be on time for class so we don't have to start (and therefore end) late.

**Class Format:** The class is discussion based. I may give one or two traditional lectures to introduce some concepts, but for most class periods we'll be discussing material in a less formal seminar course format. Each week one or two students will lead the discussion on the assigned reading(s). This should not be a lecture presentation to the class, but should introduce the paper, present its highlights, and then generally moderate class discussion. As a rough guide, I'd expect maybe the first 15 minutes of class to be the paper introduction (by whoever is leading that week), and the next 30 or so minutes to be general discussion (with whoever is leading, being prepared to keep the discussion going, and answer questions if necessary). The last 5 minutes of class each week will be a mini-assignment where you each write a few comments about the paper.

**Undergraduate and Graduate student expectations:** As with any 500-level class, expectations differ for graduate and undergraduate students. Graduate students are expected to do significantly more independent background reading than undergraduates. In order to evaluate this independent work graduate student will be required to perform two additional assignments compared to undergraduates. These assignments should provide graduate students with an increased breadth of knowledge in a particular area:

- 1) As well as a regular class discussion on an assigned paper, graduate students are required to lead an additional class discussion on a recent (2008 onwards) paper of their own choosing. This must be a primary scientific study related to biofilm microbiology/ecology. Students should provide a copy of the paper in pdf format for me to make available to the class at least one week prior to the discussion.
- 2) In addition to presenting the specific paper described above, graduate students are required to write a short (1-2 pages) synthesis paper that presents background information on that topic. This should be a short overview of the literature related to this topic and include a 5-6 relevant citations.

**Grading:** Because of the nature of this course, grading is going to be based much more on in-class work (discussion, presentation) rather than formal exams. Each week when we discuss a paper I'll assign a score for your participation. When you lead the discussion, I'll assign a score for how you did that also. You're also going to grade each other. Otherwise a standard grading scale with no plus or minus (90% A, 80% B, 70% C, and 60% D).

<i><b>Undergraduate Grading Scale:</b></i>	<i>Points</i>	
Participation in class discussions (10 pts each, best ten count):	100	(40%)
Assignments (5 pts each, best ten count):	50	(20%)
Leading the class discussion (25 pts from me):	25	(10%)
Leading the class discussion (25 pts from your peers):	25	(10%)
Final Exam (take home, due Dec 10 <sup>th</sup> )	<u>50</u>	<u>(20%)</u>
<b>TOTAL</b>	<b>250</b>	<b>(100%)</b>

<i><b>Graduate Grading Scale:</b></i>	<i>Points</i>	
Participation in class discussions (10 pts each, best ten count):	100	(28.6%)
Assignments (5 pts each, best ten count):	50	(14.3%)
Leading the class discussion (25 pts from me):	25	(7.1%)
Leading the class discussion (25 pts from your peers):	25	(7.1%)
Final Exam (take home, due Dec 10 <sup>th</sup> )	50	(14.3%)
Leading the class discussion 2 (25 pts from me):	25	(7.1%)
Leading the class discussion 2 (25 pts from your peers):	25	(7.1%)
Term paper	<u>50</u>	<u>(14.3%)</u>
<b>TOTAL</b>	<b>350</b>	<b>(100%)</b>

*I'll keep this general grading scale, but some of the specific points may change depending upon enrollment.*

*Syllabus subject to change. This version current as of 8/26/13.*

## How the Discussion and Assignments Work (READ THIS!):

### Before Class:

- Each week a paper a paper is posted on Blackboard. Everyone prints and reads this, and brings it to class. The student who is leading the discussion pays particular attention to it.
- ***If you are leading the discussion:*** Read the paper (at least over the weekend before class), make notes, plan out things you may want to talk about. Look up anything that you are not sure about. Sometime before the day of class (so by Monday 2 pm at the latest) email me (cjackson@olemiss.edu) a few questions that relate to the paper and could be part of the assignment for that week.
- ***If you are not leading the discussion:*** Read the paper, think of any questions/comments that you have. Think about how the paper relates to things that we may have covered already in the course. Be prepared to say a few things, and to be able to explain the basics of the paper. If you didn't understand something, think of questions to ask about it.

### In Class:

- ***If you are leading the discussion:*** Introduce the paper. Maybe give a little background on who the authors are (you could Google them before class, check if they have a webpage with more information etc.). Explain what the paper is about, what the key points are. You can work through the paper page by page, or you can give more of an overview – it's up to you. Feel free to include your personal assessment of the paper (Did you like it or dislike it? Was it easy to read? Did it interest you or not?)
- ***If you are not leading the discussion:*** Listen as the paper is introduced, but feel free to interject comments. Ask questions. If you disagree with what somebody else says, then speak up (nicely). Try to say at least a couple of comments each week (your grade is based on that).
- At the end of class I'll pass out a short (5 minute) assignment that asks for some general information about the paper. We may have covered some of this in the discussion. If you're leading the discussion and you emailed me some questions, then they may be on there – you also don't do the assignment for that week. As part of the assignment, you will assign a score out of 25 for the student who led the discussion. As a guide 22.5/25 would be an A (excellent job), 20/25 a B (good, but not quite as good as it could have been), 17.5/25 a C (OK, not great, but passable), 15/25 a D (not good, but not so terrible that you wanted to yell at the person or slap them). You will also grade your own participation (out of 10).

### After each Class/Grading:

- ***If you are leading the discussion:*** You get a score out of 25 from me, and another score out of 25 from everyone else (the average of what everyone gives you). You don't get a grade for participation or the assignment this week.
- ***If you are not leading the discussion:*** You get a score out of 5 for the assignment. You also get a score out of 10 for participation. The participation score will be the average of the score that I assign and the score that you assign yourself – unless I feel that your own score is grossly inflated (example: you say nothing in class and still assign yourself a 10), in which case I'll pencil in your self-assigned score as a 0 and use that in the average (which, will likely reduce it).