Biology 229 (Microbiology) Syllabus – Spring 2016

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Lecture: Gottwald A201: MWF 8:00-8:50
Lab: Gottwald B200: Wed 1:30-4:20
Office hours: Gottwald B213: By appointment

MATERIALS REQUIRED FOR THE COURSE:

- Blackboard access: http://blackboard.richmond.edu/
- Calculator
- Mark Wheelis *Principles of Modern Microbiology*
- Dedicated notebook for the laboratory (small three ring binder)

COURSE GOALS:

Microorganisms (or microbes) are organisms that can not be seen with the naked eye, and are frequently single-celled. They are the most numerous, most diverse and most important organisms on earth. Species of bacteria have been found that can live in temperatures above the boiling point and below the freezing point. As a group, microbes can metabolize almost any compound. They are essential to the biogeochemical cycling of elements on our earth, and yet a single bacterium can kill a human. The mechanisms by which microbes perform all these and many other unique functions are biologically interesting, and their impact on our world is unsurpassed by any other group of organisms. The overall goals of this course include the following:

- **To introduce you to the unique aspects of biology of microbes and to the role that these organisms play in our world.** A broad range of topics in the field will be presented. These include microbial cell structure & function, microbial growth & nutrition, unique aspects of microbial metabolism, viruses, microbial ecology, and microbial pathogenesis. The contributions of microbes to the world, both positive and negative, will be highlighted through out the course.
- **To help you understand the process by which scientific knowledge is acquired.** In the laboratory, after a brief introduction to the tools of microbiology, you will use these tools to characterize unknown microbes. You will also either ask and answer your own research questions or explore current open questions in microbiology research.
- **To teach you how to read and apply the current scientific literature.** Some of the most exciting parts of science involve ongoing research, so we will learn how to read and analyze primary literature related to microbiology.
- **To communicate scientific ideas.** The ability to clearly and precisely articulate ideas, both in the written and oral form, is one of the hallmarks of a student trained in the liberal arts. These skills will be further polished in the context of communicating scientific ideas. You will present your lab results in written reports, and you will communicate your understanding of microbiology orally in our class discussions.

COURSE SCHEDULE: See attached

COURSE READING LIST: A list of the assigned reading is attached as a separate document. To make most effective use of our class time and for you to learn most successfully, it is essential that you read the material before coming to class. Advanced work assignments on the reading will be given (see attached document).

EVALUATION OF PERFORMANCE IN BIOL229 (1000 points total):

100 points Exam 1	200 points activities/paper quizzes/advanced work
100 points Exam 2	150 points Lab data analysis/lab notebook/lab quizzes
25 points Quizam	150 points Group Project Lab Report
100 points Exam 3	175 points Cumulative Final Exam

Please remember that college is about learning. That being said, I still have to assign you a grade at the end of the semester that reflects what you have earned in the class. There are a total of 1000 points that you can earn in this course. The grading scale will be as follows: A ≥ 93% of the points, A- = 90-92%, B+ = 87-89%, B = 83-86%, B- = 80-82%, C+ = 77-79%, C = 73-76%, C- = 70-72%, D+ = 67-69%, D = 63-66%, D- = 60-62%, F= < 60% Also, note that an "A" grade is reserved for truly excellent (not just good/above average) performance in the course.

GENERAL COURSE POLICIES:

- Exam and quiz policy: There are no make-up exams or quizzes. This policy is reflective of how the "real world" operates. The only exceptions to this are as follows: (1) Conflict with a religious holiday observance (Note that this must be brought to my attention the FIRST week of class, otherwise this is not a valid exception), (2) Death of a family member or family emergency, (3) Severe illness (e.g. one that requires hospitalization or home-bound treatment; accompanied by a medical professional's note), (4) Valid university activity, (5) Interviews for post-grad activities. **Oversleeping because of an alarm failure is not a valid excuse.**
- Submission of work: The method of assignment submission (electronic versus paper) will be indicated on each assignment, and you must adhere to those instructions. In the real world, generally there is no such thing as submitting late work (or if there is, there is a substantial penalty). Thus, late work will be assessed a **10% penalty per day** after the due date and time. Late work will not be accepted after 3 days. If we go over the answers to an assignment in class the day it is due, you will not be able to turn that homework assignment in late. Technology failures are not acceptable excuses for late work. Backup your work!
- Attendance policy (lab): Attendance in lab is required. **If you miss a lab for an unexcused reason, 7% of the FINAL course grade will be deducted from your final grade.**
- Attendance policy (lecture): I do take attendance every class period. I expect that you will be present during class both physically and mentally. Research shows that students master the material better when they attend each class session and pay attention during class. If you are absent for a graded in-class activity, you will not be able to make it up that work.
- I do realize that this is an early morning class, and I sympathize with students who fall asleep easily while sitting (I have this problem myself). However, dozing off in class is not acceptable. Since you will do a lot of in-class group work during our 8 AM meetings, I hope that this will create a stimulating learning environment. If you have difficulty staying awake in early morning classes, please come talk with me and I can suggest strategies to help keep you alert.

- Tardiness is not acceptable, as it disturbs your peers as well as your instructor. If you have to come to class late due to an unexpected event, please quietly slip in and sit in the back. If you arrive late, you will not be given extra time on quizzes or exams. This applies in lecture and lab.

CLASSROOM ETIQUETTE:

- Asking questions and talking in class as part of discussion is definitely encouraged! However, please do not whisper to your neighbor in class while others are speaking, as it disturbs those around you and the instructor. If you have a question related to the class that you are discussing with your neighbor, chances are someone else has that question too. Please raise your hand and ask.
- Contributing to class discussion and answering questions: Different people process answering questions at different speeds. Thus, if you have an answer to a question or a comment related to the material, I ask that you raise your hand and wait for me to acknowledge you before answering. This will allow me to give all students the chance to contribute to the discussion. I will also call on students to answer questions, after giving students time to work out an answer to a question.
- Group work in class: At times, you may be asked to work on a question or task with your peers in the class. Please limit your conversation to topics related to microbiology
- Laptop/smart phone policy: Please keep cell phones silenced **and put away** (not on the desk, or in your notebook, or in your lap…. and never on the lab bench). In the rare event that you need to be available for phone calls, please talk to me about it before class. If you take notes on your computer, I respectfully request that you stick to course related work. Before class begins, please close all programs not related to the class including Facebook, on-line shopping, ESPN, etc. You may think you are able to multitask, but the scientific evidence suggests otherwise. Also, multitasking on your computer is likely distracting to others behind you (there is scientific evidence to support this too). Ask me if you want the references!
- I strive to make my classroom welcoming to all students. If you have other concerns about the class and/or lab environment, please email me before the first week of class.

GENERAL LABORATORY INFORMATION

1. Purpose: The laboratory exercises are designed to help you relate and supplement the material covered in lecture with actual experimental techniques. Any information covered in lab is fair game for lecture exams. Additionally, the laboratory exercises will allow you to ask and answer your own questions and/or current open questions in microbiology.

2. Out-of-class preparation/work: Many of the laboratory experiments will take the full lab session. To use your time most efficiently and to avoid making costly mistakes, it is ESSENTIAL that you come to the laboratory prepared to do the work. You should have read the laboratory exercise handout, as indicated in the announcements, and the assigned background readings. **There will be lab quizzes to ensure that you have read the labs before the lab session.** Additionally, for some laboratory exercises, you will need to return to the laboratory on days other than the assigned laboratory period to check your experiments. This reflects the nature of working with microbes.

3. In-class record keeping: To intelligently analyze and write about your experiments, it is critical that you keep careful records of the results you obtain. Once your plates, tubes, samples, etc are discarded in the biohazard waste container, it will be impossible to go back and check for any mistakes that you made. A separate handout will be provided on the lab notebook.

4. Laboratory safety: Some of the microorganisms that you will be working with in the laboratory have the potential to be pathogenic. Thus it is ESSENTIAL that you adhere to the safety procedures outlined on the safety handout. **Please note that if you are immunocompromised for any reason, you should (1) discuss the risks of lab work in the course with your physician and (2) notify me.**

5. Laboratory partners: Laboratory partners will be randomly assigned. This is not an attempt to keep you and your best buddy from being partners; instead, it is meant to simulate the REAL WORLD where one does not always get to choose with whom he or she will collaborate. It is essential that you develop skills that are related to working with other people. Thus, you and your laboratory partner(s) will work together and share data. However, the written laboratory assignments are to be done separately, unless otherwise noted. You are free to discuss your data with your laboratory partners and your classmates.

6. Attendance: **Attendance in lab is required**. If you miss a lab for an unexcused reason, 7% of the FINAL course grade will be deducted from your final grade.

7. Please email me that you have read to the end of this syllabus.

HONOR CODE:

The School of Arts and Sciences, the Jepson School of Leadership Studies, and the Robins School of Business each operate under the University Honor Code Statute. Breaches of the code are cheating, plagiarism, lying, academic theft, disclosing honor council information, registration irregularity and failure to report an Honor Code Statute violation. Any person who violates these standards shall be subject to disciplinary action ranging from reprimand up to and including expulsion from the University. Determination of guilt or innocence and imposition of sanctions, when necessary, will be effected according to established procedures, with procedural fairness observed, and with appropriate appeal procedures available. The University Honor Code Statute is available from any dean's office. (http://oncampus.richmond.edu/academics/catalog/academic_policies.html#studentlife)

How does the honor code apply in this course? While you are encouraged to discuss course material with others, all graded assignments must be your own work unless the assignment is designated as group work in the assignment.

- Work that you are encouraged to do as a group for the lecture component of this course includes: discussing lecture notes and reading material; working practice problems; discussing lab data interpretation; some assignments (indicated on the assignments).
- The policy for graded assignments done as a group is that all members of the group participate equally in the work. For some group work, each student will supply a written statement of their contribution and effort on the assignment.
- It is a violation of the honor code to look at or use old graded assignments or assignment keys from previous BIOL229 courses.
- Quizzes and exams are not group work.
- Copying and pasting anything from another written source, including the web, is plagiarism.