

# **Biology 310**

## **General Microbiology**

### **Spring 2018**

#### **Course Basics**

**Course Instructor:** Dr. Heather Fullerton

**Phone:** 843.953.7363

**E-mail:** fullertonhe@cofc.edu

**Office:** HWWE 310

**Office hours:** **W:** 2-3:30pm **Th:** 10-11:30am and by appointment

**Lecture:** **T/R** 8:30-9:45am; HWWE 217

**Labs:** **T:** 11:00-2:00 pm, 2:10-5:10 pm,

**W:** 11:00-2:00pm, 2:10-5:10 pm

**R:** 11:00-2:00 pm

All labs held in at MUSC Pharm Quad Building 402

**Required Texts:** Brock Biology of Microorganisms, 15<sup>th</sup> Edition  
Microbiology: Laboratory Theory & Application, Brief, 3<sup>rd</sup> Edition

#### **Course Objective:**

This course serves as an introduction to microbiology with a focus on the central role of microbes in the field of biology, the unique metabolic and organismal diversity of microbes, and their role in history from the origin of life to modern times. In addition, work in this course will help you to further develop and refine your skills in critical thinking, analysis, scientific communication, and interpersonal interactions.

#### **Course Learning Goals:**

Upon completing this course, you should be able to:

1. Understand microbiology within its historical context, and relate pivotal discoveries and major advances
2. Describe structure-function relationships of microbial cell components
3. Understand microbial cell growth and regulation of cell division
4. Differentiate mechanisms of antimicrobial agents
5. Describe the mechanisms of regulation of microbial gene expression
6. Relate major pathways of anabolism and catabolism to the role of microbes in their environments
7. Discuss the impact of microbes on human society
8. Consider the role of microbes in the evolution of life on Earth

Laboratory Specific learning goals

1. Use a microscope knowledgeably and with ease
2. Culture various bacterial species per their physiological needs and environmental adaptations
3. Quantify bacteria from samples including food, water, and pure cultures
4. Use selective and differential media to identify unknown bacterial cultures

## Course Evaluation & Assessment

Your ability to meet course goals will be determined via your performance on various assignments and exams throughout the semester.

Assignments (not exams) will include a grading rubric containing the expectations for each assignment. If these expectations are unclear, please ask.

## Grading

A = 90%      B = 80-89%      C = 70-79%      D = 60-69%      F < 60%

This scale is intended as a general guide for final course letter grades. I will award plus/minus grades (e.g. A-, B+, etc.) at the end of the semester based on the overall distribution of points within the class.

### Total Points:

Exam 1	150 pts
Exam 2	150 pts
Final Exam	300 pts
Online and in class assignments	150 pts
Lecture Quizzes	25 pts
Lab Quizzes	25 pts
Lab Assignments	150 pts
Lab Midterm	50 pts
Lab Final	100 pts
Total	1100 pts

**Your grade is weighted with 75% from lectures (750 points total) and 25% from labs (250 points total).**

Point totals and assignments may be altered at the instructor's discretion during the semester depending on available time and other course constraints. Please note that grades on Oaks are not be your final grade. Final exams and overall course distribution will determine your final. The Oaks grades will reflect all work done and should be an indicator to you of your progress.

### In Class Extra Credit Oral Quizzes:

During most lectures, there will be short oral quizzes covering the current material. Names will be drawn at random and each student's name will be drawn at least once times during the semester. A correct answer earns 1 pt, an incorrect answer earns 0 pts, and if you are not in class you will lose 1 pt.

### College of Charleston Honor Code and Academic Integrity

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor. Students can find the complete Honor Code and all related processes in the Student Handbook at <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>

### **Oaks:**

Reading quizzes, assignments, readings, lab assignments will all be posted on the course website. Lecture PowerPoint slides will be made available following the class period in which they were presented. Additional lab material and course announcements will also be posted on oaks.

### **General Class Policies**

#### *Final Exam:*

Saturday, April 28<sup>th</sup>, 8:00-11:00am

#### *No Class:*

Spring Break: Sunday, Mar 18 -Saturday March 24

#### *Computers & Cell phones:*

Computers can be used for notetaking and other class related activity. Turn all cell phones to silent before class. No calls, no texting during class. Please be respectful to your classmates and do not email, text or check facebook, instagram, snapchat, etc. during class. Everyone behind you can see that cat video you are watching.

#### *Email:*

Email can be an efficient and effective mode of communication. However, emails pertaining to information that can be found on the syllabus, on Oaks, or on assignment sheets are not appropriate and will **not** elicit a response. Email is best used for things such as setting up office hour appointments or quick questions about content or assignments (longer questions are best answered during office hours).

#### *Office hours:*

Office hours are a fantastic way for you to get questions answered and for you to work one-on-one with the instructor. While there are only 2 formally scheduled office hours can set up an appointment for times that might work better with your schedule.

### *Attendance:*

You should be in your seat, prepared for the day and ready to begin class on time. Late entrances are disruptive to your fellow students. Please be respectful and arrive on time.

### *Classroom Climate:*

I am committed to establishing and maintaining a classroom climate that is inclusive and respectful for all students. Learning includes being able to voice a variety of perspectives, and classroom discussion is encouraged. While students' expressed ideas may vary and/or be opposed to one another, it is important for all of us to listen and engage respectfully with each other. I am also committed to a classroom and campus environment free of discrimination of all kinds. If you feel that the classroom climate does not reflect my commitment as expressed above, I would encourage you to contact me so that we can discuss this. Also, if you have experienced any harassing or discriminatory behavior, to include sexual harassment or sexual violence, I can provide you with information about support resources and reporting options, including those that are confidential.

### **Lecture specific policies:**

Many of the in-class learning activities will be graded in order to provide you with feedback on how well you understand and can apply the material. Activities often rely on group work and cannot be made up at a later date. You must be in class in order to participate.

Absences due to illness or emergencies are sometimes unavoidable. **It is your responsibility to contact the instructor within 24 hours of your absence to request any in-class materials.** After this period, you will be unable to earn any of the points from the class you missed. It is your responsibility to obtain all information presented during class periods that you miss.

Any missed in-class activities due to attendance at a university-sanctioned events, such as an away sporting event or scientific presentation, will not be counted against your grade.

**Exams:** There will be 2 exams given throughout the semester and one cumulative final exam.

**In class assignments and pop quizzes:** In addition to the extra credit oral quizzes, there will be written pop quizzes throughout the semester. These cannot be done outside of lecture time.

### **Lab Specific Policies**

*Additional Lab Specific Policies will be discussed the first day of lab.*

#### 1. **Laboratory Notebook:**

- a. A *bound* laboratory notebook is optional but a great way to take notes on experiments and exercises.
- b. **Before you come to lab**, read the required materials and make any notes necessary in your lab notebook or lab manual. Try making brief, numbered lists of steps, or drawing a flowchart to familiarize yourself with the lab exercises. Results can be recorded in your lab notebook or manual. Your results will be used to complete lab assignments and to answer activity specific questions on Oaks.

2. **Quizzes:** There will be pop quizzes throughout the term to show that you have read through the laboratory exercise prior to the class period.
3. **Attendance:** Attendance in the laboratory is mandatory. There will be **no** make-up labs. You should assume that each lab period will take the entire period.
  - a. Students who have more than 1 unexcused absences in lab for the semester will fail the course.
  - b. Students who will miss lab for a university-sanctioned event (e.g. sports, music performance, etc.) need to notify the laboratory instructor no later than one week prior to the lab to be missed so that appropriate arrangements can be made.
4. **Safety:** *Additional safety information will be provided in lab.*
  - a. Close-toed shoes are required (that means no flip-flops or sandals). If you wear inappropriate footwear, you **WILL NOT BE ALLOWED TO STAY IN LAB**.
  - b. Wearing a lab coat is required.
  - c. Gloves should be used while working with stains, hazardous chemicals, or if you have open wounds/abrasions on your hands.
  - d. Long hair needs to be tied back or put up. This will prevent your hair from catching fire or falling into the bacterial cultures
  - e. Wash hands at the beginning the lab period **and** before you leave the laboratory room.

#### **Missed Exams & Late Assignments:**

If there is an emergency at test time, please contact me ASAP. **Make-up exams will be oral** and will be given at a time we deem appropriate. If you cannot avoid being gone on an exam day, it is your responsibility to contact me **at least one week** prior to the scheduled test date.

Throughout the semester, most assignments will be due at the **beginning** of class the day they are due. **Late assignments** are defined as **any assignments turned in after the beginning of class the day they are due**. Assignments received within 24 hr. after they are due will have 20% deducted from the total points earned. Assignments received within 48 hr. after they are due will have 30% deducted from the total points earned. No credit will be given for assignments received more than 48 hr. past the time they are due. Weekends and holidays count in the hours post-due calculation. Late assignments will only be accepted without penalty for unavoidable circumstances, as determined by the instructor.

Due dates for online quizzes and assignments will be posted along with the assignment. Online assignments will have the same penalties for late submissions. Online reading quizzes will be due before class and will have a

#### **Special Arrangements:**

The College will make reasonable accommodations for persons with documented disabilities. Students should apply at the Center for Disability Services / SNAP, located on the first floor of the Lightsey Center, Suite 104. **Students approved for accommodations are responsible for notifying me**, during my office hours, as soon as possible and for contacting me one week before accommodation is needed.

**Center for Student Learning:**

I encourage you to utilize the Center for Student Learning's (CSL) academic support services for assistance in study strategies and course content. They offer tutoring (*including a new walk-in Science Tutoring Lab*), Supplemental Instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at <http://esl.cofc.edu> or call (843)953-5635.

### Tentative Lecture and Exam Schedule

	Dates	Topic	Readings
Week 1	Jan 9 Jan 11	Course overview Historical Perspective	1.1-1.6 1.9-1.14
Week 2	Jan 16 Jan 18	Cell Structure & Growth	2.1-2.7, 2.10 5.1-5.3
Week 3	Jan 23 Jan 25	Cell Structure & Growth	5.5-5.8 7.1-7.5 19.1-19.2
Week 4	Jan 30 Feb 1	Genome Replication & Organization	4.1-4.4 7.6-7.7 9.3-9.6
Week 5	Feb 6 Feb 8	Genome Replication & Organization <b>Exam 1 (Thursday Feb 8)</b>	11.1-11.8 23.5
Week 6	Feb 13 Feb 15	Transcriptional Regulation	4.5 6.1-6.6 & 6.8-6.15 23.8
Week 7	Feb 20 Feb 22	Transcriptional Regulation & Protein synthesis	4.7-4.13 15.18
Week 8	Feb 27 Mar 1	Lifestyles & Motility	2.9, 2.11-2.13 6.7 5.3-5.14 15.17
Week 9	Mar 6 Mar 8	Energetics Carbon Metabolism	3.4-3.12 21.1 14.5, 14.7, 14.16-14.21
Week 10	Mar 13 Mar 15	Carbon Metabolism <b>Exam 2 (Thursday, March 15)</b>	
Week 11	Mar 20 Mar 22	Spring Break	
Week 12	Mar 27 Mar 29	Photosynthesis	14.1-14.3 15.1-15.7
Week 13	April 3 April 5	Nitrogen & Sulfur cycles	21.3-21.4 14.9, 14.11-14.15 15.9-15.13
Week 14	April 10 April 12	Ecology & Phylogeny	13.3, 13.7, 13.10 20.1-20.3, 20.5, 20.6, 20.10, 20.14
Week 15	April 17 April 19	Metagenomes & Animal Associated Microbes	9.1-9.2, 9.7-9.8 23.12-23.13 24.1-24.5, 24.10-24.11
Finals Week	April 25 - May 2	<b>Final Exam Saturday, April 28, 2018</b>	