

# General Microbiology

BIOL 310/310L

Fall 2018

Course Syllabus

TR 9:25-10:40 RITA 154

## Professor: **Matthew E. Rhodes, Ph.D**

**Email:** rhodesme@cofc.edu

**Office Phone:** (843) 953-8087

**Office:** 119 RITA

**Office Hours:** W 2:00-3:30, R 11:00-12:30 and by appointment

I will do my best to respond to all e-mails within one business day.

Feel free to come by outside office hours. If my door is open come on in.

If it is closed feel free to knock.

## **Microbiology Lab (310L):** RITA 167

Ms. Tracy Hirsch (Sections 4, 5, and 7, T 3:25, W 12:10, R 12:10)

Dr. Susan Morrison (Section 6, W 3:15)

Dr. Matthew Rhodes (Section 2, T 12:10)

(I have no idea how the section numbers were assigned)

## **Required Texts and Materials:**

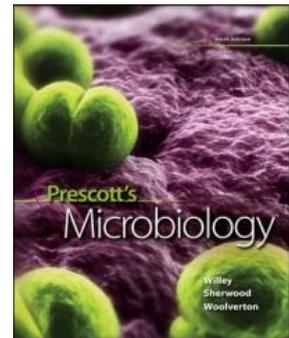
**Lecture:** *Prescott's Microbiology*, 10<sup>th</sup> Edition

Joanne M. Willey, Linda M. Sherwood, Christopher J. Woolverton,

Copyright year: **2017**

McGraw Hill Publishing

Bound, binder, ebook



**Web Component:** *Prescott's Microbiology*, 10<sup>th</sup> Edition

McGraw Hill Publishing provides a smart learn ebook and access to connect. Assignments posted through connect will be mandatory and will compile a percentage of student's grade for the course.

For help with registration or technical assistance contact

1-800-331-5094 or visit [www.mhhe.com/support](http://www.mhhe.com/support)

See last page for details on how to get Connect



**Lab:** Techniques in Microbiology Student Handbook ISBN:9780132240116

**Supplemental Readings:** A variety of supplemental readings will be posted on OAKs. These readings will vary in length and complexity. They range from newspaper articles to primary literature. They will be pivotal for in class assignments and content from the readings may appear on exams and quizzes. The goal of the supplemental readings is to expose you to recent and/or particularly fascinating (in my opinion) discoveries and controversies in microbiology. Should something pique your interest and you would like to delve into it further please reach out.

**General Course Information:** This course begins by examining the history of microbiology, the shapes, sizes, and structure of microorganisms so students become familiar with the world of microbiology. We will then look at microbial growth and how the growth of microbes can be controlled, followed by the means by which microbes obtain energy (physiology), and the flow of information within a microbial cell. Following this understanding of how the microbial cell functions, we will examine the viruses and how these interact with both microbial and animal cells. We end the semester with an introduction to the interactions between microbes and humans, the response of our immune system, and we will examine certain microorganisms and their role in disease.

**Student Learning Outcomes:** The goal of this course is to demonstrate how microbes have shaped the world and continue to shape the world. Starting all the way back at the origin of life we will investigate the impact that microbial life has had on the evolution of life eventually ending with the effects of microbial life on the human body. To better appreciate how this occurs we will need to understand microbial physiology, metabolisms, and genetics. Upon completion of this course the student should be able to:

1. Discuss the historical development of the field of microbiology.
2. Identify the components of the microbial world with special references to the bacteria.
3. Discuss the pathogens and their means of invasion.
4. Compare the sizes, shapes, and physical makeup of the bacterial and non-bacterial prokaryotic cells, the fungi, protozoa and viruses.
5. Discuss different theories surrounding the origin of life.
6. Evaluate the role of microorganisms in disease and the prevention and treatment of infectious disease.
7. Describe the varied nutritional types of bacteria at the elementary level.
8. Clarify the fundamentals of the molecular genetics of bacteria.
9. Discuss the principles of molecular biology including DNA structure, DNA replication, transcription, and translation.
10. Explain the regulation of gene expression including enzyme activity, induction, repression, DNA binding proteins, and attenuation.
11. Clarify the molecular basis of mutation, genetic recombination, transformation, transduction and conjugation.
12. Evaluate the role that microbes play in regulating human health.
13. Understand how microbes interact with their environments.
14. And others...

### **Grade Composition:**

#### **Lecture (75%):**

Exams: (2 x 100)	200
Final Exam	150
In Class Assignments	40
Quizzes (Best 3 of 4)	30
Connect Assignments	20
Participation/Attendance	5

#### **Lab (25%):**

Lab Practical	100
Lab Reports	60
Lab Quizzes (Best 3 of 4)	30

Pathogen Presentation	20
Unknown Report	20
Participation/Attendance	5

## Exams

Two in-class (1.25-hour) exams will be given on scheduled dates. The exams will consist of a variety of fill-in-the-blank, drawings, or short answer questions, with minimal or no multiple choice questions. The exam material will primarily focus on the material covered since the preceding exam, but applicative questions of cumulative material may appear.

Make-up exams are purely at the discretion of the professor and are reserved for extreme circumstances only. There is no obligation of the professor to provide make-up exam opportunities. Contact your professor as soon as possible if you think you will or if you have missed an exam. No make-ups will be administered after a 48-hour period. See other attendance policies.

## Final Exam

A single final exam will be comprehensive and will count for roughly a third of the final grade. The final exam grade can NOT be dropped. There is no obligation of the professor to provide make-up exam opportunities. Approximately half of the final exam points will come from new material covered since the preceding exam, and the remaining percentage of the exam questions cover material covered previously in the semester. The exams will consist of a variety of fill-in-the-blank, drawings, or short answer questions, with minimal or no multiple choice questions.

## Connect Assignments

For each chapter of Prescott's microbiology a connect assignment will be posted. The student must complete the assignment through connect prior to the lecture during which that chapter will be discussed. This is to assure that you have read the material and are prepared for class. Personally, I wish this had been around when I was a student. Connect assignments will be graded P/F with each assignment worth 1 point. In order to pass you must get >90% of the questions right.

With that said I am instituting a new and trial policy: **Should you get an A on an exam you are exempt from connect assignments until the next exam.**

## In Class Assignments

Throughout the semester there will be occasional in class assignments based on classwork and supplemental readings. You will be working in small groups and these will be turned in at the end of the class period.

**NOTE: Connect assignments often will not cover the entire chapter. You should still read the entirety of the assigned reading and are responsible for the material.**

## Lab Grade

A quarter of your grade will be based on the lab component of the course. A more detailed explanation of the lab portion of the class will be provided in individual lab sections.

## Extra-Credit

Extra-credit opportunities are of the sole discretion of the professor; there is no obligation of the professor to provide extra-credit opportunities. IF an extra-credit opportunity is provided it will be provided to the entire student body of all of the professor's sections of the class. There will be NO personal extra-

credit assignments. These potential extra-credit assignments will be announced in class and are not presented in the syllabus' grade computation.

### Syllabus/Schedule Modifications

The professor may change this syllabus/schedule as the semester progresses depending on the learning environment. Students will be notified of changes during class and through the course website. The professor is not responsible if a student does not learn of changes due to absence from class.

### Letter Grade Schedule

Letter Grade	Numerical Range (%)
A	93.0 – 96.9
A -	90.0 – 92.9
B +	87.0 – 89.9
B	83.0 – 86.9
B -	80.0 – 82.9
C +	77.0 – 79.9
C	73.0 – 76.9
C -	70.0 – 72.9
D +	67.0 – 69.9
D	63.0 – 66.9
F	0.00 – 62.9

### Tentative Lecture and Exam Schedule

Lecture #	Date	Topic	Assigned readings (read before class!)
1	8/21	Course Policies/Procedures. Origin of life	
2	8/23	The history of microbiology and Microscopy	Chapters 1.1-1.3 and Chapter 2 and SR1
3	8/28	Review of Biochemistry and Bacterial Cell Culture	Appendix 1 and Chapter 3: 3.1-3.4 and SR2 (Just intro and recommendations) and SR3
4	8/30	Bacterial Cell Structure Cont.	Chapter 3: 3.5-3.9 SR4 and SR5 (5b optional)
5	9/4	Archaeal Cell Structure	Chapter 4 and SR6
6	9/6	Eukaryotic Cell Structure	Chapter 5 and SR7
	9/11	No Class (Knight Video)	
7	9/13	Microbial Growth	Chapter 7.1 – 7.8 and SR 8-10
8	9/18	Taxonomy	Chapter 19.1 and 19.5 only and SR11
	9/20	Exam 1	Chapters 1-5, Appendix A, 7, and 19 SR 1-11, Lectures 1-8, Knight Video
9	9/25	Metabolism	Chapter 10 SR 12 (12b optional)
10	9/27	Catabolism	Chapter 11 SR 13

11	10/2	Viruses	Chapter 6, Chapter 27.1 (Skim the rest of chapter 27) SR 14 (14b optional)
12	10/4	Bacterial Genome Replication	Chapter 13
13	10/9	Regulation of Bacterial Cellular Processes	Chapter 14 SR 15
14	10/11	Control of Microorganisms in the Environment	Chapter 8 SR 16
15	10/16	Antimicrobial Chemotherapy	Chapter 9 SR 17
16	10/18	Biogeochemical Cycling	Chapter 28
	10/23	Exam 2	Chapters 6, 8-11, 13, 14, and 28, Lectures 9-16
17	10/25	Mechanisms of Genetic Variation	Chapter 16 SR 19 and SR 20
18	11/1	Microbial Interactions	Chapter 32 SR 21
19	11/8	Pathogenicity and Infection	Chapter 35
20	11/13	Innate Host Response	Chapter 33 SR 22
21	11/15	Human Diseases	Selected Sections in 38-40 SR 23
22	11/20	Catchup Day	
23	11/27	Medical Case Studies	
24	11/29	Adaptive Immunity	Chapter 34

## PREREQUISITES

For this course prerequisites are BIOL 111, 111L, 112, 112L and 211 and One Year of Chemistry. "One Year of Chemistry" means you must have already completed, with passing grades, CHEM 101-101L-102-102L or CHEM 111-111L-112-112L, or the equivalent. For transfer students, the course must have transferred to the CofC as equivalent to the above. BIOL 305 is a prerequisite or corequisite, although CHEM 231 can be substituted for BIOL 211 & 305. Biology also requires MATH 250 Statistics as a prerequisite to all of its upper-level classes.

## ATTENDANCE

Attendance at all lectures is expected and can be an important factor in your class performance; roll will be taken occasionally and there will be 4 pop quizzes throughout the semester. Signing someone else's name or permitting someone else to sign your name is a violation of the Honor Code. An excessive number of unexcused absences from lecture (excessive = more than 2 in lecture) or from lab (one = excessive in lab) constitutes grounds for dismissal from class and assignment of a grade of WA (equivalent to an F) or voiding eligibility for bonus/project/score adjustment points. Roll will always be taken in laboratory where no unexcused absences are permitted. Official absence notices are handled by the Absence Memo Office, located in the white house at the corner of Glebe & George Streets (67 George Street) next to the Stern Center. If you will be absent on official college business (e.g. athletic events, professional conference), please provide documentation in advance. Excessive excused absences especially in lab will necessitate withdrawal from the class.

Please make every effort to be on time. Electronic devices such as cell phones and smart pads may not be used. Texting and similar activities during class are forbidden. Laptops or netbooks may be used only for note-taking during class unless otherwise instructed.

**IF you have a DISABILITY** that qualifies you for academic accommodations, please provide a letter from Disability Services at the beginning of the semester. I will be happy to discuss your situation in my office. For more information regarding accommodations, please contact the Office of Disability Services at (843)-953-1431, stop by their office in Lightsey Center Room 104 &/or refer to their web site at <http://www.cofc.edu/~cds/> Any SNAP student must turn in their envelope at least 48 hours before the scheduled test.

The **deadline for WITHDRAWAL** from the course with a grade of "W" is **Wednesday, October 24, 2018**. In accordance with College regulations, withdrawal from the course after that date will be permitted only under dire and unpredictable circumstances, such as sudden serious illness (see "Withdrawal from Courses" in the Undergraduate Catalog).

The **LABORATORY SCHEDULE is uploaded on OAKS**. Come to the first lab and all other labs prepared. This semester, **labs begin on August 21—23, 2018**. The FIRST TWO lab weeks of lab, where many basic techniques are introduced, are *critical* for your success in lab. There is a zero tolerance policy for unexcused absences in lab. Your lab grade comprises almost 25% of the grade for the entire course and is incorporated into the overall grade. **You must sign a safety statement for lab, and then observe the safety rules** which are extensive.

All students are expected to **attend lab at their assigned lab time**. There is limited space for additional students in most lab sections. If you cannot attend at your scheduled time, you must get permission in advance for each time you need to come to a different lab and you must have a reason the instructor deems valid.

All students are expected to be very familiar with and to adhere to **THE HONOR SYSTEM OF THE COLLEGE OF CHARLESTON**. In this class, removal of a test or copies of test questions from the classroom is a

violation of the Honor Code. Anyone who shares contents of tests from prior semesters with someone in the class or anyone who uses this material for study for a test is also in violation of the Honor Code. Material from other sources must be properly attributed. Work *claimed* as your own (e.g. for mini-projects, posters, unknown report) must be your own work. Plagiarism is unacceptable.

**There will be two full-period TESTS based on lectures, text and assigned reading. Tests are tentatively scheduled for the following dates: September 20th, 2018 (Thursday) and October 23, 2018 (Tuesday)**

Tests & other assignments will usually be reviewed in class. Tests must be returned & will be kept on file by the instructor. If you are absent, it is your responsibility to examine your test during office hours or to arrange an appointment. There will be blocks of scheduled times for you to review your old tests prior to the final exam.

## **I. College of Charleston Honor Code and Academic Integrity**

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, 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 grade 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. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance.

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>

## Advice From Previous Students Who Have Taken This Course:

- Study, come to class, take notes and ASK QUESTIONS
- Print off the slides and study material and you will be fine
- Stay on top of the notes/lectures. Don't get behind. A LOT of info.
- Come to class. The powerpoints are great for refreshing but aren't good enough.
- Pay attention to slides and the amount of time spent on one topic, its likely important.
- Focus on Slides!
- Study every night
- Don't take 17 credit hours like me. Be sure you have plenty of time to devote.
- Be ready to learn and have fun
- Need to study a lot
- Review each lecture slide in depth and use the book only as a resource to supplement. Reading relevant figures/legends was helpful.
- Read chapters before class and stay on your game!
- Study your ass off!
- Take good notes of the slides even though they are online. Listen to repeated subject matter.
- Read and reread not just on the exam week.
- Make sure to add notes from class to powerpoints.
- Concentrate on big ideas
- You get out of the class what you put into it
- To continually review notes
- NEVER miss lecture!
- Keep up on studying notes and pay attention to all tables
- Don't skip class. Print off the slides before class to bring in
- Go to class!! Focus on powerpoints.



## STUDENT REGISTRATION/PURCHASING INSTRUCTIONS

### What You Need

You will be required to have materials from McGraw-Hill Education which include the textbook (or eBook) and Connect (which includes LearnSmart, your adaptive online study tool, and SmartBook, your adaptive eBook). The required textbook for this class is “**Prescott’s Microbiology**”, 10<sup>th</sup> edition by Joanne Willey. Your online homework assignments, which are only available through Connect, will account for of your grade, so if you do purchase a used textbook, you must also purchase Connect through McGraw-Hill’s website.

### Where to Get It

- **Online - All DIGITAL:** You can purchase Connect (no print book, but includes the complete eBook and access to all course content) directly from the course website as well. To register and purchase Connect without the print book, follow the steps below.  
**Bookstore:** Your bookstore has a package which includes the full textbook and a Connect access code (you will need this code to access the online study modules and materials). The ISBN for this package is as follows: 9781259830457. If you would like to go all digital, you can simply purchase a Connect access code from the bookstore which includes the eBook and Connect access. The ISBN for the Connect access code is as follows: 9781259659836. To register for Connect, follow the steps below.
- You can also purchase access directly from mhe by following the link below.

### How to Register for Connect

1. Go the section web address:

[http://connect.mheducation.com/class/m-rhodes-micro\\_rhodes\\_fa18](http://connect.mheducation.com/class/m-rhodes-micro_rhodes_fa18)

2. Click the “**Register Now**” Button.
3. Enter your email address.
  - a. If you already have a McGraw-Hill account you will be prompted for your password.
  - b. If you do not have a McGraw-Hill account you will be asked to create one.
4. To access Connect:
  - a. If you already have a registration code (for example, included in the print package from the bookstore), enter it in the “**Have a registration code?**” section.
  - b. If you do not have an access code, select “**Buy Online**” (valid credit card required).

- c. If you wish to purchase at a later time, you may begin a 14-day **Courtesy Access** period at this time. You will be prompted to upgrade to full Connect access before your courtesy access period expires. You **must** purchase full Connect access in order to maintain access to your course assignments and materials
5. Complete the registration form, and click “**Submit**”

## FAQs & Tutorials



Visit the Connect Student Success Academy for online FAQs and tutorials:

<http://www.connectstudentsuccess.com/>

## Technical Support

If you need Technical Support (forgotten password, wrong code, etc.) please contact the McGraw-Hill Education **Customer Experience Group (CXG)** at:

**(800) 331-5094**

[www.mhhe.com/support](http://www.mhhe.com/support)

*(Please be sure to get your case number for future reference if you call the CXG line.)*