

GENERAL MICROBIOLOGY BIOL 310

Spring Semester 2017

Lecture: 9:55--11:10 am TR

Dr. Susan J. Morrison

Office: 310 Harbor Walk West

Phone: (843) 953-7363

e-mail: MorrisonS@CofC.edu

Microbiology Lab: Med Univ. of SC, School of Pharmacy Bldg (280 Calhoun St) Room 402

Lab Instructors: Ms. Tracy Hirsch (Sections 3, 5, & 6 Tuesday, Wed 11:30 am-2:30 pm section), Thursday

Phone messages for lab instructor: 953-5504 (Biology Office) to leave message

Dr. Susan Morrison (Sections 1 & 4, Monday & Wednesday 2:30-5:30 pm)

Mailboxes(mail goes *below* the name) : Biology Office, SSMB 2nd floor [Note that I pick up my mail infrequently in SSMB, so if there is any urgency, please deliver it to HWWE or let me know by e-mail. In HWWE, it should be slid under my office door (if it isn't too thick) OR placed in my primary mailbox in HWWE Room 304 (door is usually locked, but all faculty have access).

SCOPE OF COURSE--CATALOG DESCRIPTION

An introduction to the microbial world with special emphasis on bacteria. Topics include cellular structures, bacterial metabolism, microbial genetics, bacterial growth and its control, virology and the epidemiology and pathogenicity of disease-producing microorganisms. The laboratory emphasizes proper handling techniques, identification methods, & properties of microorganisms.

STUDENT LEARNING OUTCOMES

At the completion of this course, a student should:

IN LECTURE

1. be able to integrate prerequisite knowledge of basic chemistry and college-level mathematics with the study of microorganisms;
2. be able to identify and explain the basic concepts of microbiology and describe the properties of microorganisms (primarily bacteria and viruses), including: (a) cell structure, function and growth; (b) methods of growing and studying microbes; (c) metabolism; (d) genetics and molecular biology; (e) factors affecting microbial growth and survival, including environmental and chemical agents; (f) the major groups of bacteria; (g) the role of microorganisms in daily life, including such topics as human health and disease, food, and/or biogeochemical cycling; and (h) the major groups of bacteria and their characteristics;
3. be able to define, understand, use, and spell and pronounce correctly the basic vocabulary of microbiology;
4. be able to summarize the historical development of microbiology and to explain the contributions of microbes in modern day events;
5. display the ability to apply factual knowledge to new situations, such as interpretation of results, analysis of current news events, or understanding of a phenomenon;
6. be able to apply critical thinking skills to the subject of microbiology and its applications.

IN LABORATORY

1. display the ability to work with Class I microorganisms safely and correctly in laboratory;
2. display the ability to perform basic microbiology laboratory techniques (including stains, dilutions, streak plates, microscopy, media preparation, biochemical tests);

continued

3. display the ability to explain the theoretical basis of the tests, procedures and the observed microbial activity;
4. be able to state the key characteristics of the groups of bacteria used in lab;
5. display the ability to identify bacteria, including culture isolation and maintenance, laboratory analysis, use of references and reporting of results using professional (American Society for Microbiology) journal format

TEXT: In lieu of *requiring* you to purchase a specific text, there is a list of possible text books. You may choose to purchase any one of these from a discount source, borrow one from someone else, use a next-to-the-last edition (rather than the current one), and/or use an online source (such as the free textbook by Todar). Several different texts are on reserve in the library under my name.

LABORATORY MANUAL (required): *Microbiology Laboratory Theory & Application 3rd edition BRIEF* by Michael Leboffe & Burton Pierce. 2016. ISBN-13: 978-1-61731-477-3. (Morton Publishing)

LABORATORY PORTION OF COURSEPACK (required): back part of manual; pages have an L before the number.

COURSE PACK (required): at SAS-E-Ink (219 Calhoun St) (*Bring appropriate part to every lecture & lab class.*)

Suggestions for making more effective use of the course pack:

- a. **get some dividers and split into sections** corresponding with the major topic areas: Intro & History; Medical Intro; Microscopy & Cell Structures; Nutrition & Metabolism; Growth & Environment; DNA, RNA, Protein & Regulation; Viruses; Genetics; other
- b. provide **additional 3-hole paper** for notes too extensive to fit on the printed pages
- c. **develop your own additional pages** to help you study, e.g. charts comparing two things or references to specific pages or topics in the text
- d. **use the coursepack as a means to *reduce* your note taking, *not* as a substitute** for taking notes, for reading a text or for attending lecture. Many pages are incomplete, by design
- e. **use a new copy** to get the full benefit.
- f. **Separate the LAB** portion (pages with an L before the page number; second half of book) & put it in a different binder

RECOMMENDED BOOKS (Optional):

1. *Control of Communicable Diseases Manual*, 20th edition, December 2014. David Heymann, editor. American Public Health Association. 746 pp.
2. Borror, Donald J. *Dictionary of Word Roots and Combining Forms* (or similar sources)
3. Campbell, Neil A., & Jane B. Reece. *Biology*. Current or earlier editions. [the BIOL 111-112-211 lecture text; this introductory biology text or comparable text books will be a useful reference for basic concepts in biology]

Some additional books may be found in the non-text book section of the college bookstore. These include:

- Oshinsky, David M. 2005. *Polio: An American Story* Oxford University Press 352 pp. [Winner, 2006 Pulitzer Prize for History]
- deKruif, Paul, and F. Gonzalez-Crussi. 1926, 2002. *Microbe Hunters* Harcourt 357 pp. [a classic, though it has the faults & perspective of a book written 90 years ago]
- Preston, Richard. 1994. *The Hot Zone* (about Ebola) & 2002. *The Demon in the Freezer* (about smallpox) [Both are best-selling, non-technical, non-fiction books. You should critique as a microbiologist.]
- Pittet, Didier. 2016. *Hand Hygiene: A Handbook for Medical Professionals / Edition 1* Wiley, 392 pp.
- Books by Garrett, Laurie.

Two recent trade books are

- Blaser, Martin J. 2015. *Missing Microbes: How the Overuse of Antibiotics Is Fueling Our Modern Plagues*
- Yong, Ed. 2016. *I Contain Multitudes: The Microbes Within Us and a Grand View of Life*, 368 pp.

OAKS may be used for class information, announcements and other material related to the class. If we are using it, you should check it regularly. Also, monitor your campus e-mail account for postings.

OFFICE HOURS I will be available immediately following lecture on most Tuesdays (11:15 am-noon) & Thursdays (11:15 am-noon), as well as most Wednesdays from 10:30 to 11:30 am. You are encouraged to see me at these times *or* to arrange an appointment. Additional hours &/or review sessions will be announced for critical times in the semester. If I am available, I will also be happy to meet with you on a walk-in basis. Please introduce yourself by full name each time you come to see me to help me learn your name. Feel free to call ahead to be sure I am in my office before you trek from Main Campus to Harbor Walk.

TRANSIT to/from class is a challenge that we have adapted to. Since Harbor Walk courses are off-set by 30 minutes, you should have no problem reaching class on time. Options include bicycling, walking or the DASH shuttle. To reach MUSC, you will need to ride two different shuttles or ride from HWWE to Main Campus & walk the rest of the way. There is a bike rack between 2 buildings just west of 280 Calhoun.

E-Mails If you send me an **e-mail**, please lead off the subject with the words "CLASS" or "MICRO." I get inundated daily with e-mails and am less likely to overlook your message with this word displayed prominently. Please remember that I can send confidential information only to your official College of Charleston e-mail account or MUSC e-mail account.

A TENTATIVE **LECTURE SEQUENCE** is attached. It is highly beneficial to read the corresponding text material before each topic is covered in lecture and to also familiarize yourself with what is in the course packet.

PREREQUISITES for this course 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 at all lectures is expected and can be an important factor in your class performance; roll will be taken regularly though not necessarily every time. 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 also 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. The usefulness of the coursepack will be sharply reduced if you aren't present in lecture, *since it serves to make note-taking easier, not replace the lecture.*

Please make every effort to be on time. Leaving the end seats vacant will help accommodate anyone who does come late. Once class has begun, you are expected to remain seated unless you have a genuine emergency. Please do not bring food to class; beverages will be disregarded as long as they aren't spilled and aren't heard. 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. Also, be sure there will be no audible signals from cell phones or other devices.

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/~cde/> 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 **Thursday, March 23, 2017**. 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). [Note that this deadline is after Express II begins, so if you need an Express II course to replace a dropped class, you will need to make your decision before the **W** date.]

You will be expected to do a variety of **mathematical calculations** in this class, including use of exponents and logarithms. The computations are simple enough that CALCULATORS should *not* be necessary for most of the calculations you will do in this class (lecture or lab). *Programmed* and/or wireless-compatible calculators are not acceptable on lecture tests. Very inexpensive scientific calculators, can be found at the major office supply stores or general stores. If you bring a calculator, it is your responsibility to know how to use it.

The **LABORATORY SCHEDULE is in your course pack**. Come to the first lab and all other labs prepared. This semester, **labs begin on January 23—26, 2017**, which is the first week when *all* lab sections can meet). 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.

NAMETAGS: MUSC requires all of its faculty, staff, students & contractors to wear nametags. Be sure you have your ID available at all times in case you are asked to show it. If you want a holder to clip on your lab coat, we can issue one.

#####

There will be three (3) full-period TESTS based on lectures, text and assigned reading. Tests are tentatively scheduled for the following dates:

February 14, 2017	(Tuesday)
March 21, 2017	(Tuesday)
April 13, 2017	(Thursday)

Make-up tests will be given only if your absence from an examination is due to illness certified by a physician's excuse or, at the discretion of the instructor, to a documented occurrence beyond your control. You must notify the instructor in advance when possible or immediately after a missed test; if you can't reach me personally, you should send an e-mail and/or leave a voice message. Scheduling of the make-up test will be determined by the (continued)

instructor, and must be at the earliest possible opportunity. Make-up tests must be taken *before* the graded test is shown to other students (except in extraordinary circumstances).

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.

The **FINAL EXAMINATION** will be cumulative and will be an objective test (with the likely exception of the bonus questions). Final exams are scheduled for April 28—May 5, 2017; the **final exam** for this class (9:55 TR) is scheduled for **8:00—11:00 am on Thursday, May 4, 2017**. Students are expected to take the exam and faculty are expected to give their exam at the scheduled time.

SOME OTHER IMPORTANT DATES---Subject to Change

Return to lab at 24-48 hours to read test results[tentative]	Tues-Fri, February 21-24, 2017
Storm Makeup Days (if needed)	Saturday, February 4, 2017
Lab Test #1	Thursday, April 27, 2017 (Reading Day)
Unknown Reports Due for Lab	Mon-Thurs, March 13-16, 2017
Pathogen Posters (Lab)	Mon-Thurs, March 27-30, 2017, Start of lab
Mini-projects Due for Lecture	Mon-Thurs, April 3-6, 2017
Cumulative Lab Test #2	Friday April 7, 2017, 5:00 pm*** [all turned in at same time in a packet] Mon-Thurs, April 17-20, 2017* *For lab test #2 only, you may take yours with an <i>earlier</i> section.

***Please don't wait until the last minute! These should be done as you go along.
See lab schedule for other lab dates.

FINAL GRADE DETERMINATION:

Three one-hour tests (130 points each)	390 points
Mini-projects for lecture	30
Final examination	200
Laboratory	200
<hr/>	
	820 points total

GRADING SCALE:

93-100%	A Superior	(762.5---820 points)
90-92.9%	A-	(738.0---762.4 points)
87-89.9%	B+ Very Good	(713.5---737.9 points)
82-86.9%	B Good	(672.5---713.4 points)
80-81.9%	B-	(656.0---672.4 points)
77-79.9%	C+ Fair	(631.5---655.9 points)
73-76.9%	C Acceptable	(598.5---631.4 points)
-----Grades below C do not transfer-----		
71-72.9%	C-	(582.0---598.4 points)
69-70.9%	D+	(566.0---581.9 points)
66-68.9%	D Barely acceptable	(541.0 ---565.9 points)
≤65.9%	F	less than 541 points

QUESTIONS about semester tests and assignments must be addressed *no later than* the start of the final exam.

In your coursepack is a tally sheet where you can keep track of your scores.

CODE OF ETHICS: The following statement is derived from the Code of Ethics of the **American Society for Microbiology** (to which Dr. Morrison belongs) and a statement by the ASM Council Policy Committee.

The American Society for Microbiology is dedicated to the utilization of microbiological sciences for the promotion of human welfare and for the accumulation of knowledge. This long-standing position of the Society affirms that microbiologists will work for the proper and beneficent application of science and will discourage any use of microbes contrary to the welfare of humankind. Bioterrorism violates the fundamental principles expressed in the Code of Ethics of the society and is abhorrent to the ASM and its members.

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>