

CEDAR CREST COLLEGE
Biology 127 – Clinical Microbiology
Lecture Syllabus, Schedule, Assignments & Policies
Spring 2010 – Dr. Amy J. Reese

I. INSTRUCTOR INFORMATION

Instructor: Dr. Amy J. Reese

Office: Science Center 110

Phone: 610-606-4666, x3517

Email: ajreese@cedarcrest.edu

Office Hours: Monday 1:00 – 1:50 pm, Tuesday 3 – 3:50 pm, Wednesday 4:00 – 4:50 pm, and Thursday 11:00 – 11:50 pm. Other hours by appointment.

II. GENERAL COURSE INFORMATION

Biology 127: Fundamentals of Microbiology, 3 credits lecture, 1 credit lab

Course Electronics: <http://www2.cedarcrest.edu/academic/bio/areese/index.html>, Ecompanion site

Course Prerequisites: CHE 103, 111 (or other chemistry course) is required so that students are familiar with the basic chemistry associated with macromolecules. This is critical to being able to understand how cells are made of these building blocks and, in turn, how microbial control works.

Course Description: The general characteristics of bacteria, protozoa, yeasts, molds, and viruses are used to understand the role of microorganisms in human health and disease. The interactions between the host and the microorganisms are emphasized as well as the physical and chemical methods of control.

Course Objectives: At the successful completion of the course, you should be able to:

1. Describe the general characteristics of microbes: bacteria, protozoa, yeast/mold, and viruses.
2. Understand the roles and locations of microorganisms in life.
3. Explain the role that microorganisms have in maintaining human health and in causing disease.
4. Understand the role of food preservation and handling for prevention of food-borne diseases.
5. Describe the chemical and physical methods that are used to control microorganisms.
6. Explain the function of the immune system, including non-specific and specific responses.
7. Understand how microbes enter the body and how they are transmitted to others.
8. Understand how antibiotics work.
9. Explain the roles of antibodies and vaccines.
10. Describe common disease-causing microorganisms for different body systems.

Textbooks, materials & format:

- **Required:** Gerard J. Tortora, Berdell R. Funke, and Christine L. Case. *Microbiology An Introduction*, 10th Ed., Benjamin Cummings, 2010. [ISBN 13:978-0-321-55007-1]
- **Required:** Radio frequency (RF) keypad “clicker” sold (and sold back) at the bookstore. The simple one (grey, not blue) is recommended and preferred.
- Lecture 3 hours/week in Miller Building 33. Laboratory 3 hours/week (two 1.5 hour sections) in Science Center 116. Lab and lecture must be taken together unless only one must be repeated.

III. COURSE OUTCOMES, ASSESSMENT AND STUDENT EVALUATIONLecture Outcomes:

1. You will learn the principles of microbiology necessary for careers in nursing and nutrition.
2. You will become more aware of the microbial life around you and the roles these microbes play.
3. You will be able to reduce microbial contamination in a food preparation or healthcare setting to prevent the spread of microbial diseases.

Lecture Assessment:

1. Regular in-class “clicker” quizzes will be given throughout the semester to help spot-check material from the previous classes, to provide the opportunity to practice the material, and to earn points throughout the lecture course. Homework assignments may also be given as needed.
2. There will be four major lecture exams on the different microbiological content areas.
3. There will be a comprehensive exam at the conclusion of the semester.

Lecture Grading:

300 points	3 exams, 100 pts each
100 points	Regular “clicker” quizzes & any assignments
200 points	Cumulative final
600 points	Total lecture points

Final grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F
%	93-100	90-92.9	87-89.9	83-86.9	80-82.9	77-79.9	73-76.9	70-72.9	67-69.9	60-66.9	<60

1. Students in some programs need a C in order to pass microbiology. Please be aware that this is your responsibility.
2. Please also recall that you may only repeat one science course for pre-nursing.

IV. LECTURE POLICIES AND STUDENT RESPONSIBILITIES

A. Academic Policies:

1. I fully support the “Honor Code” and “Honor Philosophy” set out by the *Cedar Crest College Student Handbook*.
2. I fully support the “Community Standards for Academic Conduct” and the “Community Standards for Social Conduct” set out by the *Cedar Crest College Student Handbook*. This means but is not limited to the following:
 - Plagiarism will result in a zero for the assignment.
 - Cheating in lecture or lab will result in a zero for the test/assignment and could result in failure of the course.
 - Plagiarism and cheating violations will be reported to the Provost, Academic Services, and/or the Honor & Judicial Board as necessary, and may result in failure of the course.
 - Violations or violation intensions of these statements should be brought to my attention.
3. I expect the classroom to be an environment in which all students can participate and learn. Behaviors that detract from this ideal environment (as listed in the “Classroom Protocol,” of *Cedar Crest College Student Handbook*, as mentioned below, and as decided upon by the class should be avoided at all costs. If there are repeated classroom disruptions, you may have your final grade lowered by up to 10% or by a third of a letter grade.
4. Please refrain from all activities that detract from the learning of others around you. This includes but is not limited to the following areas. Please silence cell phones during class unless there is an impending emergency, do not text or instant message, do not routinely come to class late, do not eat or talk in ways that are distracting to those around you, and do not leave the classroom except for the bathroom or related emergencies. Reasonable anticipated interruptions should be cleared in advance.
5. If the College is canceled for weather or related reasons and it is an exam day, we will plan on having the exam on the next scheduled class day unless I notify you otherwise. If the College is canceled the lecture before we have an exam, the exam will remain as scheduled, as we have new section material scheduled for each lecture immediately proceeding each exam. If the College is delayed (say until 10 am), we will adhere to the delayed timeframe, even if this falls on an exam day.

B. Lecture Attendance & Assignment Policies:

1. You are expected to attend lecture and to come to class prepared. Attendance will be documented. If you have extended unexcused absences, your final grade may be lowered by up to 10% or by a third of a letter grade. Unexcused absences for lecture exams or finals will result a zero for that exam.
2. In the unfortunate event of an unplanned absence due to a personal or family medical emergency, you must contact the Acting Dean of Student Affairs (Denise O’Neill: 610-437-4471, x4680; doneill@cedarcrest.edu) to obtain appropriate documentation for an excused absence. These offices will contact me. You should also contact me to make alternative coursework plans. Formal excused absences must be received within one week the absence to be valid.
3. For expected absences or early departures due to Cedar Crest-sanctioned events, please notify me as soon as possible and see your coach or instructor for official documentation in advance.

4. You are expected to be at lecture on either side of the spring and Easter break. Scheduling family vacations during the non-break sections of the semester is highly inadvisable.
5. It is your responsibility to obtain notes and handouts from a classmate for any missed material for lecture absences. If you miss class on a day on which an assignment is given, it is your responsibility to get a copy of the uncompleted assignment from a classmate. If you miss class on a day on which an assignment is due, it is your responsibility to get the assignment in on time or as soon as possible (to minimize your deducted points).
6. Assignments are to be done as scheduled and work to be handed in before the beginning of the class in which it is due unless otherwise instructed. Late penalties are 5% per day and 20% per week, of the total points possible for the assignment.
7. If you miss class on a day on which an assignment or handout is passed out, it is your responsibility to get a copy of the uncompleted assignment from a classmate.
8. Do not use pink or red ink/pencil for assignments you will be turning in.

C. Lecture Quiz, Exam & Final Exam Policies:

1. “Clicker” quizzes will usually be scheduled. Keep in mind they may occur at any point during a class and at any point throughout the semester. If you miss a quiz, you will forfeit the points associated with that quiz. These quizzes cannot be made up unless your absence is officially excused. There will be extra points associated with this portion of your grade such that missing only 1 quiz will not have significant impact your grade.
2. You are expected to take “clicker quizzes” with your notebooks and books closed unless otherwise instructed.
3. If you arrive late for an exam or quiz in lecture, you forfeit that time in taking the test.
4. You are expected to sit with a space between you and the next student whenever possible and may be given exam seat assignments.
5. You are expected to be at each exam on time and as scheduled. Only emergencies or special circumstances will be allowed as reasons for any make-up. Any adjustments must fulfill the following 4 requirements:
 - You must notify me on or before the day of the exam. This should happen before the time of the scheduled exam, pending valid emergencies.
 - I must receive official documented (from the Health Center, Dean of Student Affairs, or Academic Services etc.) that is considered valid (at my discretion).
 - Formal excused absences must be received within one week of the absence to be valid.
 - The test must be completed within exactly one week of the absence or as otherwise arranged. It is your responsibility to contact me to schedule any approved make-up exam, and this should be done as soon as possible.
6. Without a legitimate and credible excuse on or before the exam day, you will receive a zero for that test.
7. Some make-up exams may not necessarily correspond to the regular test format. They will be given at a designated time and may also be scheduled during the week of final exams.
8. Before each exam, all material must be placed in the front of the room or as otherwise directed. Purses, papers, notebooks, books, PDAs, cell phones, headphones, guests, calculators or other devices are not allowed unless otherwise directed. Exams should be in ink (not red or pink).

9. Your obligation for this course includes attendance at the final exam on the day and time scheduled by the Registrar's Office. You should not make travel arrangements (nor should your family make them for you) until the final exam schedule is published. If you must make plans early, you should schedule your travel after the last final exam day.
10. Unexcused absence for the final exam will result in a zero for that exam. Keep in mind that we have all taken exams when we feel less than 100%.
11. Final exam times cannot be rearranged unless three or more exams occur within a 24-hour period. Any exception must be petitioned and reviewed by the Department of Biological Sciences within a week of when the final exam schedule is announced in class.

D. Academic Services:

1. Disabilities Services

- Students with disabilities who wish to request accommodations should contact the Advising Center and visit the site http://www2.cedarcrest.edu/acadadvising/ada_file.html within the first two weeks of class.
- If you have a documented disability and are requesting exam accommodations, you must speak to me within the first two weeks of class to notify me that you expect to be using your accommodations. It is also your responsibility to remind me of your needs a week before each scheduled exam so that I may make appropriate arrangements to have the test at Academic Services as determined.

2. Academic Support

- The Advising Center provides many resources, such as on study skills and peer tutoring, through their website <http://www2.cedarcrest.edu/acadadvising/index.html>, email at advising@cedarcrest.edu, on campus site in Curtis 109, or by phone at 610-606-4628.

3. Course resources

- Danielle Pilla is the Instructional Assistant (IA) / Teaching Assistant (TA) student associated with all Bio 127 lecture and lab sections. Her meeting hours and locations will be posted and announced.
- There is no specific extra credit associated with this course.
- There is a sense of microbial fun and exploration associated with this course!

V. LECTURE SCHEDULE & TOPICS

<u>DATE</u>	<u>LECTURE TOPIC & ASSIGNMENTS</u>	<u>READ FOR CLASS</u>
-------------	--	-----------------------

<i>Part I: Characteristics, Growth & Mechanisms of Microorganisms</i>		
Jan 20 – W Lecture 1	<ul style="list-style-type: none"> • Course introduction, clicker testing • Syllabus & schedule overview • Introduction, extent, and impact of microorganisms 	
Jan 22 – F Lecture 2	<ul style="list-style-type: none"> • The microbial world and you 	Chapter 1
Jan 25 – M Lecture 3	<ul style="list-style-type: none"> • Organic building blocks of life (carbohydrates, lipids, proteins, and nucleic acids) 	Chapter 2

Jan 27 – W Lecture 4	<ul style="list-style-type: none"> Measurements & prokaryotic cell size Prokaryotic cell morphology, internal/external structures 	3 (esp. Fig 3.2 p 58) 4 (77-84, 89-98)
Jan 29 – F Lecture 5	<ul style="list-style-type: none"> Clicker quiz 1 on lectures 1 – 4 Prokaryotic cell envelope The Gram Stain 	4 (84-87) 3 (69-70)
Feb 1 – M Lecture 6	<ul style="list-style-type: none"> Metabolism basics 	Chapter 5 (highlights)
Feb 3– W Lecture 7	<ul style="list-style-type: none"> Microbial growth 	Chapter 6
Feb 5 – F Lecture 8	<ul style="list-style-type: none"> Clicker quiz 2 on lectures 5 – 7 Classification of bacteria Prokaryotic diversity 	10 (278-285) 11 (highlights)
Feb 8 – M Lecture 9	<ul style="list-style-type: none"> Eukaryotic cell structure vs. prokaryotic Origins of eukaryotic organelles, organism relatedness 	4 (98-113) 10 (274-278)
Feb 10 – W	EXAM 1 (lectures 1-8)	
Feb 12 – F Lecture 10	<ul style="list-style-type: none"> Clicker quiz 3 on lectures 8 – 9 Fungi 	Chapter 12
Feb 15 – M Lecture 11	<ul style="list-style-type: none"> Protozoa, helminths, & arthropod vectors 	Chapter 12
Feb 17 – W Lecture 12	<ul style="list-style-type: none"> Viruses – structures, types 	Chapter 13
Feb 19 – F Lecture 13	<ul style="list-style-type: none"> Clicker quiz 4 on lectures 10 – 12 Viruses - multiplication 	Chapter 13
Feb 22 – M Lecture 14	<ul style="list-style-type: none"> HIV, viruses & cancer Prions and other virus-like characters 	Chapter 13
Feb 24 – W Lecture 15	<ul style="list-style-type: none"> Microbial methods of pathogenicity 	Chapter 15
<i>Part II: Microbial control and human defenses</i>		
Feb 26 – F Lecture 16	<ul style="list-style-type: none"> Clicker quiz 5 on lectures 13 – 15 Microbial control terminology, rates & methods 	Chapter 7
Mar 1 – M	EXAM 2 (covering Part I, lectures 1-15, exam emphasis on lectures 9-15)	
Mar 3 – W Lecture 17	<ul style="list-style-type: none"> Physical control 	Chapter 7
Mar 5 – F Lecture 18	<ul style="list-style-type: none"> Clicker quiz 6 on lectures 16 – 17 Chemical control 	Chapter 7
Mar 8 - 12	NO CLASS – Spring Break	
Mar 15 – M Lecture 19	<ul style="list-style-type: none"> Antimicrobial control 	20 (highlights)
Mar 17 – W Lecture 20	<ul style="list-style-type: none"> Chemotherapy, antimicrobial sensitivity & resistance 	20

Mar 19 – F Lecture 21	<ul style="list-style-type: none"> • Clicker quiz 7 on lectures 18 – 20 • Chemotherapy, antimicrobial sensitivity & resistance 	20
Mar 22 – M Lecture 22	<ul style="list-style-type: none"> • Types of defense • 1st-line of defense <ul style="list-style-type: none"> ○ Physical ○ Chemical ○ Normal biota • 2nd-line of defense – Innate immunity • Introduction to elements in blood 	16 (449-454) 14 (400-402) 16 (454-457)
Mar 24 - W Lecture 23	<ul style="list-style-type: none"> • 2nd-line of defense – Innate immunity <ul style="list-style-type: none"> ○ Phagocytosis ○ Inflammation & fever ○ Antimicrobial substances 	16 (458-472)
Mar 26 – F Lecture 24	<ul style="list-style-type: none"> • Clicker quiz 8 on lectures 21 – 23 • 3rd-line of defense – Specific/acquired defenses <ul style="list-style-type: none"> ○ Non-specific vs. specific systems ○ Antigens and antibodies ○ B cells, humoral immunity, & antibodies 	17 (476-486)
Mar 29 – M Lecture 24	<ul style="list-style-type: none"> • 3rd-line of defense– Specific/acquired defenses (con'd) <ul style="list-style-type: none"> ○ T cells and cell-mediated immunity ○ Humoral vs. cell-mediated immunity 	17 (486-492, 496)
Mar 31 – W Lecture 25	<ul style="list-style-type: none"> • Immunity • Vaccines 	17 (493-495) 18 (501-506)
Apr 2 - 5	NO CLASS – April Break	
<i>Part III: The diseases that microbes can cause</i>		
Apr 6 – T Mon schedule Lecture 26	<ul style="list-style-type: none"> • Nosocomial (hospital acquired) infections • Medical microbiology in action, guest lecturer 	Chapter 14
Apr 7 – W Lecture 27	<ul style="list-style-type: none"> • Infection vs. disease, disease types & patterns • Concepts of epidemiology 	Chapter 14
Apr 9 – F	EXAM III (covering Part II, lectures 16-25)	
Apr 12 – M Lecture 28	<ul style="list-style-type: none"> • Diseases of the respiratory system 	Chapter 24
Apr 14 – W Lecture 29	<ul style="list-style-type: none"> • Diseases of the respiratory system 	Chapter 24
Apr 16 – F Lecture 30	<ul style="list-style-type: none"> • Clicker quiz 9 on lectures 26 – 29 • Diseases of the respiratory system • Diseases of the skin and eyes 	Chapter 24 Chapter 21
Apr 19 – M Lecture 31	<ul style="list-style-type: none"> • Diseases of the skin and eyes 	Chapter 21
Apr 21 – W Lecture 32	<ul style="list-style-type: none"> • Diseases of the urinary & reproductive system 	Chapter 26
Apr 23 – F Lecture 33	<ul style="list-style-type: none"> • Clicker quiz 10 on lectures 30 – 32 • Diseases of the urinary & reproductive system 	Chapter 26

Apr 26 – M Lecture 34	• Diseases of the digestive system	Chapter 25
Apr 28 – W Lecture 35	• Diseases of the digestive system	Chapter 25
Apr 30 – F Lecture 36	• Clicker quiz 11 on lectures 33 – 35 • Diseases of the nervous system	Chapter 22
May 3 – M Lecture 37	• Diseases of the cardiovascular & lymphatic system • Reminder of arthropod vectors	Chapter 23 12 (361-363)
May 5 – W Fri schedule	EXAM IV (covering Part III)	
	FINAL EXAM – TBA	

Lecture grade tally:

Exam/Assignment etc.	Points possible	Points scored
Clicker quiz 1	10	
Clicker quiz 2	10	
Clicker quiz 3	10	
Clicker quiz 4	10	
Clicker quiz 5	10	
Clicker quiz 6	10	
Clicker quiz 7	10	
Clicker quiz 8	10	
Clicker quiz 9	10	
Clicker quiz 10	10	
Clicker quiz 11	10	
Quiz & assignment total	100 (may score over 100)	
Lecture exam 1	50	
Lecture exam 2	50	
Lecture exam 3	100	
Lecture exam 4	100	
Lecture exam total	400	
Comprehensive final exam	200	
Lecture course total	600	
Total percent	Earned points/600*100	

STRATEGIES FOR SUCCESS

1. *Do come to class and lab ready to participate.*

- Read assigned text material before class to get an idea of the terminology and topics.
- Review notes on a regular and daily basis to be prepared to build on that material.
- Review notes from previous classes before the next class.
- Make sure to be prepared to discuss specific material in the next class as directed.
- Know what lab tests you'll be doing that day and why when you come to lab.

2. *Do ask for help if you are having trouble.*

- An instructional assistant (IA) for lab and teaching assistant (TA) for lecture is available.
- The IA is named _____ and the hours/locations are:

-
-
-
-
-

- Some of the best students have been ones that have used this resource regularly! Pick one hour that works for you and put it into your calendar.
- Individual tutors are also available, contact the Academic Advising Center.
- If you are having troubles preparing for the course, email me or visit during office hours.

3. *Do make comprehensive connections, which goes beyond memorization.*

- Use homework assignments to help review and connect material on a regular and daily basis.
- Memorization is step one. Connection of the material and concepts is step two and is critical for using microbiology in the nursing or nutrition fields. Most applications are not textbook perfect, you need to know the material inside and out to apply it.
- Think of it this way. A recital is like memorization and you practice specifically for it. But science is always changing, I want you to learn to sightread!

4. *Do regularly attend classes*

- You can read the book (and you should), but you wouldn't want to rely on the book alone.
- In class I highlight the points on which you should focus. I tend to test from my class notes.
- Tips and key information may also be given in class.
- Besides, I say and do silly things in class that you don't want to miss!

5. *Do study every day and along the way!*

- Avoid "binge studying" as you'll only have to relearn the material later.
- If you practice, you'll know where you have troubles *before* the exam.
- Write your own test questions to help you review one day, try to answer them the next.
- Flash cards may be good for some, but they are only a start to memorization.
- Study with someone else (see if s/he can answer your questions), it helps with connections and makes it fun.