CEDAR CREST COLLEGE
Biology 227 Microbiology
Course Syllabus - Part I - Overview
Fall 2006

INSTRUCTOR INFORMATION

Instructor: Dr. Amy J. Reese

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Office Hours: Monday 1 – 1:50 pm, Tuesday 2:30 – 3:20 pm, Wednesday 1 – 1:50 pm, Thursday 4 – 4:50 pm, Friday 10-10:50. Other hours by drop-in or appointment.

GENERAL COURSE INFORMATION

Biology 227: Microbiology, 4 credits

Course website: http://www2.cedarcrest.edu/academic/bio/areese/index.html

Course Prerequisites: Bio121, Bio122, Chem111, and Chem112

Course Description:

A survey of microbial life with emphasis on bacteria. Microbial characteristics, physical and chemical control, metabolism, energetics, enzymes, regulation of enzyme activity, genetics, and host-microbe interactions. The laboratory includes aseptic technique, staining procedures, culture methods, microbial control, microbiology of water and soil, cultural and physical characteristics, and identification of unknowns. Lecture three hours, laboratory three hours.

Textbooks and materials:

Lecture

- **Required**: Marjorie Kelly Cowan and Kathleen Park Talaro, *Microbiology: A Systems Approach*, 1st ed., McGraw Hill, 2006. (ISBN: 0073048380)
- Recommended: Cowan & Talaro, *Microbiology: A Systems Approach- Art Notebook* study guide of images (ISBN: 0073120251)

Lab

- **Required:** Alfred E. Brown *Benson's Microbiological Applications*, Complete version, 10th ed., McGraw-Hill, 2006 (ISBN: 0072992735).
- **Required:** W.H. Freeman & Company paperback Laboratory Notebook with carbonless grid paper and available at the bookstore. (ISBN: 0716739003)
- Recommended: Index cards for study flash cards, colored pencils for clear and descriptive laboratory drawings, a folder or 3-ring binder to hold returned pre-labs and notebook pages.

Format:

Lecture 3 hours per week in Oberkotter Center for Health and Wellness, lecture hall (OBC-1)

Laboratory 3 hours per week (in two 1.5 hour sections) in OBC-2

Schedule:

The specific lecture and laboratory schedule and topics list can be found on the separate handouts *Biology 227 Microbiology– Course Syllabus – Part II - Lecture Schedule & Policies* and *Biology 227 Microbiology – Course Syllabus – Part III – Laboratory Schedule & Policies*

Course Objectives:

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

1. Explain the general characteristics of archaea, bacteria, protozoa, algae, yeast/mold, and viruses.
2. Understand the roles that microorganisms have in the scheme of life, and that they are ubiquitous.
3. Cultivate bacteria and understand their nutritional and physical requirements.
4. Understand the general aspects of bacterial enzymes, their regulation, and their energies.
5. Understand the general aspects of microbial metabolism and be aware of the metabolic diversity that exists.
6. Understand the basic principals of bacterial genetics.
7. Select the proper physical and chemical methods to control microorganisms.
8. Be aware of the roles that microbial life plays in the environment, in various biotechnical applications, in human health, and the careers and jobs that study and address these roles.
9. Perform laboratory techniques aseptically and safely.
10. Perform various staining techniques.
11. Perform bacterial dilutions and plate counts.
12. Recognize different bacterial types, protozoa, and fungi microscopically.
13. Prepare bacteriological media.
14. Isolate and identify a Gram+ or Gram- organism from soil or milk.

COURSE OUTCOMES & ASSESSMENT

Course Outcomes:

1. With a successful completion of the course, you will learn the principles of microbiology that are in line with the goals of the Education Division of the American Society for Microbiology. You will also be introduced to a range of careers and applications in microbiology.
2. You will use and demonstrate critical thinking and reasoning skills when you isolate and identify an unknown from soil or milk. Using Bergey's manual, you must determine which tests are necessary for identification of your unknown sample.
3. With successful mastery of the laboratory, you will be able to function in a laboratory requiring media preparation, aseptic technique, and the isolation, staining and culturing of bacteria.

Assessment:

1. You will be given the opportunity to complete ten homework assignments, one major classroom project, and several smaller projects throughout the semester to practice and apply your skills in preparation for lecture exams.
2. You will take three major lecture exams and a comprehensive final exam on the microbiology content areas.
3. You will submit one unknown report that includes the laboratory tests performed, the results of the tests and a discussion, which analyzes the suitability of the identification of your unknown.
4. Throughout the semester, you will prepare and submit laboratory preparation material. I will evaluate your laboratory notebook and the stains and tests of your unknown organism and other samples to evaluate your note-keeping skills and laboratory techniques.
5. During the time scheduled for the final exam, you will have an open notebook exam.
6. Five quizzes and two practical exams will be given in the laboratory to assess the ability of the students to properly interpret microbial tests.

STUDENT ASSESSMENT & EVALUATION

Grading & policies:

300 points	3 lecture exams, 100 pts each
100 points	10 lecture homework assignments, 10 pts each
100 points	Adopt-A-Microbe lecture project 20 pts poster 20 pts report 20 pts press release 20 pts creative project 20 pts before-class preparation and in-class project participation
100 points	Laboratory unknown report
100 points	2 laboratory practicals, 50 pts each
50 points	5 laboratory quizzes, 10 pts each
100 points	Laboratory preparation materials and notebook evaluations
150 points	Cumulative final exam
1000 total	

Your points from the above list will be totaled and used to compute your final grade. You are encouraged to track your own running percent of points earned out of points possible to monitor your on-going performance in the class.

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

STUDENT RESPONSIBILITIES

Attendance Policies:

1. You are expected to attend lecture regularly, to be at class on time and as scheduled, and to not leave early. Unexcused absences on the days of class projects will result in participation deduction of your Adopt-A-Microbe project grade or the grade of other affected projects. Unexcused absences for lecture exams or finals will result a zero for that exam. *Refer to your lecture syllabus and schedule for further details, policies, and procedures.*
2. Laboratory attendance is mandatory by college policy. Unexcused absences will result in a 10% reduction of your total laboratory grade. Unexcused absences on the day of a practical will result in a zero for that exam. *Refer to your laboratory syllabus and schedule for further details, policies, and procedures.*

Academic Policies:

1. I fully support the Honor Philosophy and Classroom Protocol that is implicit in the Honor Philosophy, including appropriate behavior and respect for instructors and classmates. Activities within the classroom should not detract from the learning of other students. Activities within the laboratory must not detract from the learning of other students, nor endanger the safety of individuals or equipment.
2. I fully support the Academic Standards of Integrity set out by the Cedar Crest College Catalog under Academic Policies and Services.
3. I fully support the Statement on Academic Dishonesty or Plagiarism set out by the Cedar Crest College Catalog under Academic Policies and Services.
4. Refer to your lecture and laboratory syllabi and schedules for further details, policies, and procedures.

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.
2. Academic Support
    - The Advising Center provides many resources, such as study skills resources and peer tutoring, through their website http://www2.cedarcrest.edu/acadadvising/index.html or on campus site in the Administration Bldg, room 213, or by phone at 3484.
3. Course resources
    - Samantha Gonyea is the Instructional Assistant (IA) / Teaching Assistant (TA) student associated with both Bio 277 and Bio 127 lectures and all lab sections. She will be available for both lab and lecture help in the lab (SC 116), Oberkotter lounge area if the lab in use, or as posted on the SC 116 door.