BIOLOGY 221/L
INTRODUCTORY MICROBIOLOGY

Instructor: Stan Carlson, Associate Professor
Office: MH 110B, 287-6661
Email: WebCT *only* please
Office Hrs: WebCT *and* TBA (see the instructor's schedule)
Textbook: Microbiology: An Introduction, 9th edition, 2007. Tortora, Funke, and Case. Benjamin Cummings.
Class/Lab: TTh 5:15–6:30pm & 6:40–7:55pm
Room MH 110
January 18–May 11

Overview: Biology 221/L, introductory microbiology, is a 4 credit lecture/discussion/lab course that provides an introduction to the scientific study of microorganisms and how they affect our lives. The classroom component (BIOL 221) covers the fundamentals of microbiology and surveys the microbial world; references to microbes and human diseases are also given. Specific topics include chemical principles, microscopy, functional microbial anatomy, microbial metabolism, microbial growth & control, microbial genetics, biotechnology, and microbial classification & identification. A lecture combined with class discussions will be emphasized. Two short research papers and an oral report are required. WebCT will be used as an online enhancement tool for the course. The laboratory component (BIOL 221L) provides practical experiences in each sub-discipline.

Expected Outcome: The student will understand the complexity and diversity of microorganisms and appreciate the relationship between microbes and our lives (beneficial and detrimental). The student will gain a fundamental understanding of the structure, function, and classification of microorganisms. The student will also learn how microbial population growth is controlled. Critical thinking and problem solving skills will also be developed.

Learning Assessment: There will be at least one assessment of the effectiveness of instructional methods. It will likely consist of a final evaluation of learning that will not be used for grading purposes; it will provide feedback to help in designing future classes.

Learning Goals: The successful student will learn fundamental microbiology concepts and basic microbiological lab techniques, including: essential biochemistry; techniques of observing microbes; functional anatomy of microbes; microbial metabolism and growth; microbial growth control methods; microbial genetics and biotechnology; and the classification of microbes, including the taxonomy of bacteria, archaea, fungi, algae, protozoa, helminthes, viruses, viroids, and prions. *Specific objectives* are given at the beginning of each chapter/section covered in the textbook and in the course notes.

Students are expected to:

Attend all scheduled class and lab sessions and be on time
Be well prepared for all class & lab activities
Participate appropriately in all classroom discussions & lab activities
Complete all assignments on time
Show interest, have fun, and work hard!

The instructor will:

Be on time and well prepared for each class & lab session
Facilitate activities to enhance students' understanding & appreciation of microbiology
Provide opportunities inside and outside of class for questions and clarification
Be available online and during office hours on a dependable basis
Be fair and clear in grading practices and treatment of all students

Evaluation and Grading:

Major Tests	48%
Quizzes	12%
Research Papers & Oral Report	15%
Lab Exercises	25%
Total	100%

A = 90–100% B = 80–89% C = 70–79% D = 60–69% F = below 60%

Plus/minus modifiers will likely be used for final letter grades within one percentage point of the next nearest letter grade.

The 4 major tests (each worth 12% of the course grade) will be a mixture of objective questions, definitions, short answer questions, and at least one essay question. Except under extreme circumstances (e.g., verified illness or death in the immediate family) there will be no make-up of tests. Tentative test dates are given in the class calendar. The last test will be given during finals week.

Chapter quizzes (together worth 12% of the course grade) will be given periodically to reinforce essential vocabulary and major concepts in microbiology.

Each student will prepare two short research papers (each worth 5% of the course grade) on any topic related to microbiology, and lead one 10-minute discussion (worth 5% of the course grade) based on one of these papers. Each paper will be based on at least three current references, at least two of which should come from an online magazine database (e.g., ProQuest). Each paper will consist of 750–1000 words (3–4 pages, typed & double-spaced), be written by the student, and contain a separate bibliography page. The format will follow APA style with respect to citations and references (a handout or link will be provided). Each paper *must* include copies of the references used. It is recommended that the two papers address related topics. Paper due dates are given in the class calendar. Late papers will be penalized approximately one letter grade; however, papers will not be accepted more than two weeks late.

Students are expected to arrive *on time* to class and attend all scheduled meetings. Students are also expected to participate in the class discussions, which will provide an opportunity to explore your understanding of the subject matter and present your viewpoints in an informal setting. Come prepared to discuss the assigned material.

Lab exercises will be due at the beginning of the next class or lab period after the scheduled completion date. Approximately 15 exercises will be conducted and the lowest grade will be dropped. There will be no make-up of lab exercises.

TENTATIVE CLASS CALENDAR*

WEEK	*DATES*	*ASSIGNMENTS/TESTS/DUE DATES*
1	Jan. 18	*Introduction*; Chapter 1 (the microbial world & you)
2	Jan. 23, 25	Chapter 2 (chemical principles) *Lab #1*: biogenesis
3	Jan. 30, Feb. 1	Chapter 3 (observing microbes) *Lab #2*: microscopy; *Lab #3*: sterile media preparation
4	Feb. 6, 8	Chapter 4 (anatomy of prokaryotes & eukaryotes) *Lab #4*: environmental microbes
5	Feb. 13, 15	Chapter 4 (cont.); *Lab #5*: smears & simple staining **Test #1 (Thursday)**
6	Feb. 20, 22	Chapter 5 (microbial metabolism) *Lab #6*: gram staining
7	Feb. 27, Mar. 1	Chapter 5 (cont.); *Lab #7*: aseptic transfer of bacteria Chapter 6 (microbial growth)
8	Mar. 6, 8	Chapter 6 (cont.); *Lab #8*: isolation of bacteria Chapter 7 (controlling microbial growth) **1st research paper due** (Friday, 3/9)
9	Mar. 13, 15	Chapter 7 (cont.); *Lab #9*: testing anti-microbial agents **Test #2 (Thursday)**
*	Mar. 19–25	*SPRING BREAK!*
10	Mar. 27, 29	Chapter 8 (microbial genetics) *Lab #10*: antibiotic effects
11	Apr. 3, 5	Chapter 9 (biotechnology & recombinant DNA) *Lab #11*: hand scrubbing effectiveness
12	Apr. 10, 12	Chapter 10 (classification of microbes) *Lab #12*: restriction sites on plasmid DNA
13	Apr. 17, 19	**Test #3 (Tuesday)** Chapter 11 (the prokaryotes: bacteria & archaea) *Lab #13*: coliform bacteria **2nd research paper due** (Friday, 4/19)
14	Apr. 24, 26	Chapter 11 (cont.) Chapter 12 (the eukaryotes: fungi, algae, protozoa, helminths) *Lab #14*: protozoa
15	May 1, 3	Chapter 12 (cont.) Chapter 13 (viruses, viroids, & prions) Lab #15: biochemical screening of bacteria
16	May 8, 10	**Oral Reports** (Tuesday) **Test #4** (Thursday)

***Schedule changes and more detailed information will be provided during class meetings.**

THE LAST DAY TO DROP A 16-WEEK CLASS IS MONDAY, MARCH 12. THE LAST DAY TO WITHDRAW FROM THE COLLEGE IS FRIDAY, APRIL 20. OTHER IMPORTANT DATES ARE LISTED IN THE SPRING 2007 SCHEDULE OF CLASSES.

Statement Regarding Academic Misconduct:

Any student found guilty of academic misconduct shall be subject to disciplinary action. Academic misconduct includes, but is not limited to, the following actions. CHEATING, PLAGIARISM, UNAUTHORIZED POSSESSION OF EXAMINATIONS, RESERVE LIBRARY MATERIALS OR LABORATORY MATERIALS, UNAUTHORIZED CHANGING OF GRADES ON AN EXAMINATION, INSTRUCTOR'S GRADE BOOK OR GRADE REPORT, NONDISCLOSURE OR MISREPRESENTATION IN FILLING OUT APPLICATIONS OR OTHER COLLEGE RECORDS. The following disciplinary actions and sanctions may be imposed for any of the above infractions of regulations, disciplinary probation, disciplinary suspension, dismissal, expulsion.

Americans with Disabilities Act (ADA):

If you have, or believe you have, a disability and would benefit from any accommodation(s), you may wish to register with the Student Services Office on the first floor of Martinez Hall. All medical information will be treated confidentially.

After you have registered, please make sure that your instructors receive a copy of the accommodation memorandum from Student Services within the first two weeks of class. It will be your responsibility to inform your instructors or the office of Student Services (in a timely manner) if the services/accommodations provided are not meeting your needs.

If you have a condition that may affect your ability to exit safely from the premises in an emergency or that may cause an emergency during class, you are encouraged to discuss any concerns with Ms. Irene Lutz, Campus Student Services Officer at 287-6629, or with your instructor(s).

Feel free to call Ms. Lutz at the number above or the NMSU Director of Institutional Equity, at 505/646-3635 with any questions about the Americans with Disabilities Act (ADA), and/or Section 504 of the Rehabilitation Act of 1973.

Disclaimer:

The instructor, at his/her discretion, may modify this syllabus to meet the needs of a particular class of students. Adequate notice will be given should any change to the syllabus be needed.

Attendance and Student Performance:

Students are expected to attend regularly all classes for which they are registered. When the number of absences is excessive and hinders and student's progress – normally, for a standard term, that would mean **more than three consecutive absences or five cumulative absences*** – the instructor may recommend termination from the class.

Based upon the recommendation of the instructor, and with the concurrence of the Campus Academic Officer and the Campus Student Services Officer, a student will be dropped for persistent absences or for persistent failure to complete class assignments. Similarly, a student may be dropped for behavior that interferes with the educational environment of the class. Any student who has been dropped has the right to appeal through the Student Academic Grievance Policy (see the *Student Handbook*).

*** The number of absences will be adjusted proportionally to the number of class meetings.**