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Department of Biological Sciences
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Website: http://www2.nau.edu/~fpm/

Lectures: 11:10 AM to 12:25 PM Tuesday and Thursday

Office Hours: Tu, Th – 3:30-4:30 PM
Other times by appointment

Location: Building 21, Room 256

Textbook: Microbiology – A Systems Approach, First edition, by Cowan and Talaro,

Course prerequisites: BIO 181

Required Laboratory Material: Elements of Microbiology by Richard Shand; “A Photographic
Atlas of Microbiology”, and “How to Write a Scientific Paper”.

Nature of the course: The goal of this course is to teach an understanding of the language and
concepts of microbiology and infectious disease. This understanding is important and useful
to men and women in all fields. Emerging infectious diseases have become a dominant
force and a real treat in our society, the course will address topics in this area. The course
follows a sequence of development. Approximately 40% of the course will be devoted to
basic microbiology including bacteria, viruses and eukaryotic microorganisms which cause
infectious disease. We will first study the nature of microorganisms from the perspective of
where microorganisms fit in life. The structure of prokaryotic and eukaryotic cells will be
addressed. A “typical” prokaryotic cell and its component parts will be discussed. In each
case, the function of the component will be related to its importance in infectious disease -
for example, the selective action of antimicrobics, resistance to phagocytosis, development
of vaccines or diagnosis of disease. Microbial genetics will be discussed in sufficient depth
to understand the development and spread of antimicrobial resistance and, the emergence
and re-emergence of infectious diseases. The principles of epidemiology, radiological health
and the impact of the environment on infectious disease will be discussed in relation to their
impact on infectious disease. The remainder of the course will concentrate on immunology,
infectious diseases and the environmental context of microorganisms. The immune system,
its role in the host-parasite relationship, and its importance in the prevention and treatment
of infectious disease will be discussed. The organ system approach to infectious disease
rather than the infectious agent approach will be emphasized in this section. The most
important and interesting infectious agents and diseases will be emphasized. Case histories
will be used to assist in a practical understanding of disease and in problem solving. The
etiology, pathogenesis, epidemiology, treatment, prevention and control of infectious
diseases will be discussed. The global impact of infectious disease will be addressed
throughout the course. In general, lectures will emphasize more conceptually difficult
material. For other material that is relevant but that it was covered in your previous
BIO181 I will ask you to review it and learn it on your own by reading assigned pages from your textbook.

Expectations of the Students:
1) Although there is a significant memorization component to this course, students will be tested on their problem solving abilities. Consequently students who simply memorize material in preparation for the examinations score much lower than students who actually understand the material and can apply what they know to problems that they have not seen before. Many exam questions will require not only that you have command of covered factual information, and understand it, but also be able to extrapolate material to situations not covered in class.
2) Students are expected to behave professionally at all times. For each hour you spend in lecture you will be expected to spend at least two hours in study and preparation outside the class. You will also spend time outside the laboratory writing lab reports, studying for quizzes, preparing for upcoming labs, etc.
3) Regular attendance is critical for success. It is recognized that absence from class is sometimes necessary. However, each student is accountable for all work missed due to any absence. The instructor is under no obligation to make special arrangements for students who have been absent. If you miss one class, you may be 1-2 chapters behind!!!!!
4) Students are expected to be on time and leave the classroom when the instructor indicates the class is over. After the first week of classes the instructor will close the front door 5 minutes into the lecture and students are expected to use to back door to gain access to the classroom. This is a matter of courtesy to your classmates and the instructor and to prevent disruption of the class.
5) You are expected to turn off your cell phones. The instructor will remove those students whose phones ring in class.
5) Following exams the instructor will return graded exams within one week of the exam.

Strategies for Success: (these suggestions have helped students to be successful in the past):
1) Record the lecture on tape and then play it back while reviewing your lectures notes. This will also help you if you have problems with the Aussie-Tex-Mex accent of the instructor. Note that many students like to “re-write” their lecture notes. Unfortunately, this is a singularly unproductive study method for many students. It is much more efficient to edit the notes you already have (even if they are a bit messy) while listening to the tape.
2) Form small study groups. Microbiology is a difficult subject; so forming small study groups early in the semester and getting together at least once a week to review that week’s material is very helpful. If you can explain the material to someone else, it is likely that you will understand it yourself.
3) Learn the material as you go along rather than trying to learn it just before the exam. These are daily lectures of 2 hour each and the amount of material really accumulates quickly!!!.
4) If you have trouble getting to my office hours, take advantage of the supplemental instruction or the Learning Assistance Center (LAC) for questions about this topic, as well as for help on how to improve your study. The Supplemental Instructor is the best kept secret and it is your key to really improve your grades. Sis are very capable former students….use them if you have to!!!

Examinations: There will be three in class exams (February 14, March 17, April 25), SEVEN unannounced quizzes (LOWEST SCORE WILL BE DROPPED) and a final exam (THURSDAY, May 11 10 AM – 12 PM) given during the course. NO MAKE UP EXAMS WILL BE GIVEN AND THE DATES OF THE EXAMS ARE FIRM. PLEASE MARK THEM ON YOUR CALENDAR. The exams and quizzes will consist of a combination of multiple choice, short answer and essay questions. The first three tests will be 50 questions and the final will be 100 questions. Each quiz will have 5 questions (see below for point
breakdowns). Questions for the quizzes will be from material covered in lecture and/or the review questions. Review questions will be placed on the MB205 home page. Answers for the review questions are posted on the MB205 site. Some of the questions on the examinations will be identical to the review questions; however, the wording, format or answers of others will be modified significantly. Some questions will be based on lecture material not in the text or review questions. If you would like to argue about points on exams, I will be glad to review the entire exam for accuracy with you so long as it is not more than 1 week after the exam was handed back.

Written assignment: The assignment for this problem is to choose an infectious disease of humans from the spectrum of diseases covered in this course. You may concentrate on the symptoms, treatment, mechanisms or prevention of the disease, or any combination. Write a 2-page (double-spaced, 10 to 12 point font) review of the disease. References should be noted within the text by numbers or first authors' names in parenthesis at the end of the appropriate sentence and the full references, properly cited, listed at the end of the paper. The final draft of the paper must be typed with one inch margins on all sides and will be due on November 10th. Please ask for help if you do not understand the assignment. Medline is a superb source for searching the literature concerning infectious disease as well as most topics in biological sciences. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi. Abstracts of many of the articles are available on line. Relatively few of the articles are available on line in full text versions. These are available at the library, on the web or by interlibrary loan. The references obtained from Medline are real, primary references and can be used freely for your paper. Use at least 3 primary references for your paper. Although a substantial amount of information is available on the Internet from a variety of web-pages, the information is usually not reviewed and is often not reliable. Therefore, an Internet reference cannot be used as one of the three required primary references. The textbook is a good general reference, but cannot be used as one of the three required references. At least two of the references must be from 2000 or later. A good source for general information concerning infectious disease is the CDC website: http://www.cdc.gov. The simplest reference citation system is the one used by ASM journals (e.g. Journal of Bacteriology). A detailed description of the assignment and citation of references is in a file that can be accessed from the MB205 web page. The paper will be due on March 30th.

Grades:  
90% to 100% is A  
80% to 89% is B  
70% to 79% is C  
60% to 69% is D  
Below 60% is F  

The final grade may be curved, although this in NOT a likely scenario. The decision to curve will be based on the class performance as judged by the numerical scores at the end of the course. If a curve is applied, the same number of points will be added to the grade of all students. The three in-class exams will each count 50 points, the final will count 100 points, the written assignment will count 20 points, and the unannounced quizzes will count 30 points for a total of 300 points. The grading of the research paper is described in a file on the MB205 home page. Attendance at the lectures is not required, only if a passing grade is desired. Generally, students who do not attend class miss a substantial amount of information and often fail the course. Material will be presented in lectures that will appear on tests, but will not be in the textbook or in the summaries on the web. Unannounced quizzes will be given. The purpose of the quizzes is to encourage regular attendance and regular study of the coursework. There will be NO makeup quizzes. Any students caught cheating, either on the quizzes, tests, written and laboratory assignments will be dealt with under the guidelines and policies of Northern Arizona University. The complete policy on
academic integrity is in Appendix F of NAU’s Student Handbook. Specific University policies such as the Safe Working and Learning Environment, Students with Disabilities, Institutional Review Board, and Academic Integrity policies are available on the NAU web page or in the Student Handbook.

**Total Points:**
- Exams: 250 points
- Written Assignment: 20 points
- Quizzes: 30 points
- Total: 300 points

**Course outline:**

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<th>Date</th>
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<td>Themes of Microbiology</td>
<td>Chapter 1</td>
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<td>Tools of the Laboratory</td>
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<td>Characteristics of Prokaryotic Cells</td>
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<td>Eukaryotic Cells</td>
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<td><strong>EXAM 1</strong></td>
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<td>Microbial Metabolism</td>
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<td>Physical and Chemical Control of Microbes</td>
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<td><strong>EXAM 2</strong></td>
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<td>LAST DAY TO DROP WITH A ‘W’</td>
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<td>Drugs, Microbes and the Host</td>
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<td>Diseases of the Respiratory System</td>
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<td>Oral and Gastrointestinal Diseases</td>
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<td>Environmental Microbiology</td>
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<td><strong>FINAL EXAM</strong></td>
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<td>May 11</td>
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**Additional Notes:** For the new catalog (2003-2005), only Microbiology majors and Pre-Health Professional students are required to take Microbiology. Thus, if you would like to switch to the 03-05 catalog and are not a Microbiology major or a Pre-Health Professional major, you would not have to take any Microbiology. **HOWEVER, IF YOU SWITCH TO THE NEW CATALOG, YOU WILL BE REQUIRED TO TAKE A FULL YEAR OF PHYSICS AND A SEMESTER OF BIOCHEMISTRY UNDER THE NEW GUIDELINES FOR ALL BIOLOGY MAJORS.** IF YOU CHOOSE THE NEW CATALOG OPTION, YOU WILL ALSO NEED TO TAKE A JUNIOR LEVEL WRITING COURSE. ECOLOGY (BIO 326/BIO 326LW) NOW SATISFIES THIS REQUIREMENT. **FINALLY, BIO 205 MAY BE A PREREQUISITE FOR OTHER CLASSES YOU ARE INTERESTED IN TAKING AT A FUTURE DATE.**
CHECK ON THE PREREQUISITES BEFORE YOU DECIDE ON DROPPING THIS CLASS.
YOU MAY FIND THAT YOU NEED BIO 205 TO GET INTO ANOTHER BIOLOGY CLASS
SUCH AS IMMUNOBIOLOGY (BIO 401).