BIOL 331 Microbiology (3 credits)
SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY
FALL 2012
MWF 9:00-9:50 AM C302

INSTRUCTOR:
Dr. Linda C. DeVeaux
Office C121
Office Hours: MWF 10-11 AM
Phone: 605-394-2260
Email: linda.deveaux@sdsmt.edu

COURSE DESCRIPTION:
Catalog description: This course will be a study of the morphology and physiology of representatives of various groups of microorganisms, with emphasis on bacteria.

This course is designed to provide students with two major faces of microbiology – basic and applied. The basic science of microbiology deals with the areas of the structure, biochemistry, and molecular genetics of microorganisms. Many aspects of microbial application are also discussed. This course will prepare students for upper-level biology or biology-related courses.

PREREQUISITES:
BIOL 151, and either CHEM 106 or CHEM 112

DESCRIPTION OF INSTRUCTIONAL METHODS:
The class is primarily based on lectures, most of which will be delivered as PowerPoint presentations, which will be made available as .pdf files online following each lecture. Fundamentals of chemical, genetic, physiological and metabolic characteristics of various groups of microorganisms will be discussed in relation to their role in medical and other applications. Student participation in discussion and review, which is an essential component of the course, will be incorporated into grading through unannounced quizzes.

COURSE REQUIREMENTS:

Supplementary reading material will be provided online and should be considered required reading unless designated otherwise.

All students should read the chapters in the textbooks prior to each class meeting. They are also required to attend the class regularly and to take exams at the scheduled time. No make-up exams or quizzes will be arranged except for the students who participate in institution-sponsored activities. The make-up exam or quiz, if allowed, should be taken prior to the scheduled time. Students are expected to read and follow the policy governing academic integrity in the current SDSM&T catalog that explains the importance of academic honesty and intellectual integrity (BOR Policy 3.4.2.B.1). Acts of dishonesty in class activities include cheating in exams and quizzes. Violators may be given an appropriate penalty, such as retaking the tests, reduction of grade, or expulsion from the class.

COURSE GOALS:
- To understand the principles of microbiology: chemistry, structural uniqueness, metabolism, growth, and genetics;
- To classify and characterize viruses, prokaryotic and eukaryotic microorganisms, and
- To understand microbial interactions with the biome, including microbial infectivity and host defense mechanisms, as well as microbial community structures.
STUDENT LEARNING OUTCOMES:
After completion of this course, students are expected to be able to
• Understand the general characteristics of microorganisms: chemical and biological uniqueness
• Understand the molecular and genetic bases of microbial activities
• Recognize the fundamental differences between prokaryotes and eukaryotes, and
• Understand the interactive relationships between microorganisms and their environment.

EVALUATION PROCEDURES:
There will be 4 non-cumulative exams, including the final exam, each worth 100 points. In addition, there will be unannounced quizzes throughout the semester, whose total point value will equal one exam (100 points). Course evaluation is based on the scores of THREE out of the FOUR exams (i.e. the lowest exam score will be dropped) and the total of the QUIZZES for a course total of 400 points. All students are required to take the exams at the scheduled times, and quizzes when they are presented. There will be no make-up exams or quizzes except for individuals who participate in institution-sponsored activities.
Grading scale: 100-90, A; 89-80, B; 79-70, C; 69-60, D; <60, F.
Grades will be determined on a percentage, but the instructor reserves the option to grade on a curve, if overall scores are sufficiently low.

CAMPUS AMERICANS WITH DISABILITY ACT (ADA) POLICY:
Students with special needs or requiring special accommodations should contact the instructor and/or the campus ADA coordinator, MS. Jolie McCoy, at 394-1924, at the earliest opportunity.

TENTATIVE COURSE SCHEDULE:
<table>
<thead>
<tr>
<th>Date</th>
<th>Chapter</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Aug 29-Sept. 19</td>
<td>1,2</td>
<td>Introduction/Chemical Principles</td>
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<tr>
<td>(9 lectures)</td>
<td>4,5</td>
<td>Prokaryotes and Eukaryotes</td>
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<td>September 21</td>
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<td>EXAM I</td>
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<tr>
<td>Sept. 24-Oct. 15</td>
<td>6</td>
<td>Viruses</td>
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<td>(9 lectures)</td>
<td>7</td>
<td>Microbial Growth</td>
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<td></td>
<td>8</td>
<td>Microbial Metabolism</td>
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<td>October 17</td>
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<td>EXAM II</td>
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<tr>
<td>Oct. 19-Nov. 7</td>
<td>9</td>
<td>Microbial Genetics</td>
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<td>(9 lectures)</td>
<td>10</td>
<td>Genetic Engineering/Recombinant DNA</td>
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<td>11</td>
<td>Control of Microbial Growth</td>
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<td>November 9</td>
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<td>EXAM III</td>
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<td>Nov. 14-Dec. 7</td>
<td>12</td>
<td>Chemotherapy</td>
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<td>(8 lectures)</td>
<td>13</td>
<td>Microbe-Human interactions</td>
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<td>24</td>
<td>Environmental Microbiology</td>
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<tr>
<td>December 14</td>
<td>10 am-11:50</td>
<td>FINAL EXAM</td>
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FREEDOM IN LEARNING:
Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy, student academic performance shall be evaluated solely on an academic basis and students should be free to take reasoned exception to the data or views offered in any course of study. Students who believe that an academic evaluation is unrelated to academic standards but is related instead to judgment of their personal opinion or conduct should contact the dean of the college which offers the class to initiate a review of the evaluation.