1.) DATE: 10/10/2011
2.) COMMUNITY COLLEGE: Maricopa Co. Comm. College District

3.) COURSE PROPOSED: Prefix: BIO Number: 111 Title: MICROBES & SOCIETY Credits: 4

   CROSS LISTED WITH: Prefix: Number: ; Prefix: Number: ; Prefix: Number: ;

   Prefix: Number: ; Prefix: Number: ; Prefix: Number: ;

4.) COMMUNITY COLLEGE INITIATOR: DR. JILL RAYMOND PHONE: 480-461-7103
   FAX: 480-461-7559

ELIGIBILITY: Courses must have a current Course Equivalency Guide (CEG) evaluation. Courses evaluated as NT (non-transferable) are not eligible for the General Studies Program.

MANDATORY REVIEW:

☐ The above specified course is undergoing Mandatory Review for the following Core or Awareness Area (only one area is permitted; if a course meets more than one Core or Awareness Area, please submit a separate Mandatory Review Cover Form for each Area).

POLICY: The General Studies Council (GSC-T) Policies and Procedures requires the review of previously approved community college courses every five years, to verify that they continue to meet the requirements of Core or Awareness Areas already assigned to these courses. This review is also necessary as the General Studies program evolves.

AREA(S) PROPOSED COURSE WILL SERVE: A course may be proposed for more than one core or awareness area. Although a course may satisfy a core area requirement and an awareness area requirement concurrently, a course may not be used to satisfy requirements in two core or awareness areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirements and the major program of study.

5.) PLEASE SELECT EITHER A CORE AREA OR AN AWARENESS AREA:
   Core Areas: Natural Sciences (SG) Awareness Areas: Select awareness area...

6.) On a separate sheet, please provide a description of how the course meets the specific criteria in the area for which the course is being proposed.

7.) DOCUMENTATION REQUIRED
   ☒ Course Description
   ☒ Course Syllabus
   ☒ Criteria Checklist for the area
   ☒ Table of Contents from the textbook required and/or list of required readings/books
   ☒ Description of how course meets criteria as stated in item 6.

8.) THIS COURSE CURRENTLY TRANSFERS TO ASU AS:
   ☒ DEC prefix
   ☐ Elective

Current General Studies designation(s):

Effective date: **2012 Spring** Course Equivalency Guide

Is this a multi-section course? ☒ yes ☐ no

Is it governed by a common syllabus? ☒ yes ☐ no

District-wide course competencies/outline:

Emailed approval to Jeff Ricker on 11/1/2011 (Peter Brown)

Chair/Director: Chair/Director Signature:

AGSC Action: Date action taken: ☐ Approved ☐ Disapproved

Effective Date:
**ASU—[SG] CRITERIA**

**I. - FOR ALL GENERAL [SG] NATURAL SCIENCES CORE AREA COURSES, THE FOLLOWING ARE CRITICAL CRITERIA AND MUST BE MET:**

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**II. - AT LEAST ONE OF THE ADDITIONAL CRITERIA THAT MUST BE MET WITHIN THE CONTEXT OF THE COURSE:**

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A. Stresses understanding of the nature of basic scientific issues.

B. Develops appreciation of the scope and reality of limitations in scientific capabilities.
<p>|   |   | C. Discusses costs (time, human, financial) and risks of scientific inquiry. |</p>
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<tr>
<td>BIO</td>
<td>111</td>
<td>Microbes and Society</td>
<td>SG</td>
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Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

Please see attached document.
I. Critical for General [SG] Natural Sciences Core area courses:

1. **Course emphasizes the mastery of basic scientific principles and concepts.**

   a. **How course meets spirit:** Microbes and Society is a general education introductory biology course designed to educate students on basic scientific principles and concepts using microorganisms as the platform. The course does not have a pre-requisite.

   b. **Course competencies met:**

      1. Describe the process of scientific inquiry, its realm, and limitations.

      2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

      3. Identify structural characteristics of the major groups of microorganisms.

      4. Explain and demonstrate the mechanisms of microbial growth and metabolism.

      5. Describe microbial genetics, mutations, and DNA recombination.

   c. **Evidence in syllabus and textbook:**

     Assigned Textbook Reading:

     Chapter 1 The Microbial World: Surprising and Stunning
     Chapter 2 Microbes in Perspective: Of Collectors and Classifiers
     Chapter 3 Molecules of the Cell: The Building Blocks of Life
     Chapter 4 The DNA Story: Germs, Genes, and Genomics
     Chapter 5 Bacteria: The First Microbes
     Chapter 6 Viruses: At the Threshold of Life
     Chapter 7 Protists: A Microbial Grab Bag
     Chapter 8 Fungi: Yeasts and Warm Fuzzies
     Chapter 9 Growth and Metabolism: Running the Microbial Machine
     Chapter 10 Microbial Genetics: New Genes for Germs
     Chapter 14 Biotechnology and Industry: Microbes at Work
     Chapter 16 Microbes and the Environment: No Microbes, No Life

   Grading criteria includes quizzes, exams, and class assignments that assess mastery of basic scientific principles and concepts.
2. **Addresses knowledge of scientific method.**

   a. **How course meets spirit:**
      In the weekly laboratory exercises students learn to identify and ask appropriate questions that can be answered through scientific investigations. Students formulate a hypothesis and define experimental variables. Students conduct a controlled experiment and collect and analyze the data. Students then draw conclusions and think critically and logically to create explanations based on their findings. Students then communicate the results.

   b. **Course competencies met:**
      1. Describe the process of scientific inquiry, its realm, and limitations.

      2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

   c. **Evidence in syllabus and textbook:** Students conduct weekly laboratory exercises. Grading criteria includes students completing weekly laboratory quizzes and laboratory reports.

3. **Includes coverage of the methods of scientific inquiry that characterize the particular discipline.**

   a. **How course meets spirit:**
      Understanding science content is significantly enhanced when ideas are anchored to inquiry experiences. Students in Microbes and Society engage in weekly laboratory exercises. These laboratory exercises are the activities through which students develop knowledge and understanding of scientific ideas, as well as an understanding of how scientists study the natural world. Students learn how to ask questions and use evidence to answer them. In the process of learning the strategies of scientific inquiry, students learn to conduct an investigation and collect evidence, develop and explanation from the data, and communicate and defend their conclusions.

   b. **Course competencies met:**
      1. Describe the process of scientific inquiry, its realm, and limitations.

      2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.
c. **Evidence in syllabus and textbook:** Students conduct weekly laboratory exercises. Grading criteria includes students completing weekly laboratory quizzes and laboratory reports.

4. **Addresses potential for uncertainty in scientific inquiry.**

a. **How course meets spirit:**
   Uncertainty sparks curiosity and leaves room for scientists to disprove what is currently believed to be true rather than holding onto outdated beliefs. Students in Microbes and Society engage in weekly laboratory exercises. Students discover not to ask unanswerable questions. Uncertainty is address in controlled laboratory experiments by gathering many data points and statistics are used in data analysis. The laboratory exercises emphasize the importance of being skeptical when students access their own work or the work of others and to avoid labeling conclusions as fact.

b. **Course competencies met:**
   1. Describe the process of scientific inquiry, its realm, and limitations.

   2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

c. **Evidence in syllabus and textbook:** Students conduct weekly laboratory exercises. Grading criteria includes students completing weekly laboratory quizzes and laboratory reports.

5. **Illustrates the usefulness of mathematics in scientific description and reasoning.**

a. **How course meets spirit:** Students in Bio 111 complete weekly laboratory exercises that include data collection, analysis, and interpretation. Data analysis include statistical analysis.

b. **Course competencies met:**
   1. Describe the process of scientific inquiry, its realm, and limitations.

   2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

c. **Evidence in syllabus and textbook:** Grading criteria for includes completion of weekly laboratory reports. Laboratory reports require students to list, analyze, and interpret the data.
6. Includes weekly laboratory and/or field sessions that provide hands-on exposure to scientific phenomena and methodology in the discipline, and enhance the learning of course material.

   a. How course meets spirit: Students in Bio 111 conduct weekly hands-on laboratory exercises to enhance the learning of course material.

   b. Course competencies met:

      1. Describe the process of scientific inquiry, its realm, and limitations.

      2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

   c. Evidence in syllabus and textbook: Students conduct weekly laboratory exercises. Grading criteria includes students completing weekly laboratory quizzes and laboratory reports.

7. Students submit written reports of laboratory experiments for constructive evaluation by the instructor.

   a. How course meets spirit: Grading criteria includes completion of weekly laboratory reports. Laboratory reports are evaluated by the instructor and returned to the student.

   b. Course competencies met:

      1. Describe the process of scientific inquiry, its realm, and limitations.

      2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

   c. Evidence in syllabus and textbook: Grading criteria includes completion of weekly laboratory reports.

8. Course is general or introductory in nature, ordinarily at lower-division level; not a course with great depth or specificity.

   a. How course meets spirit: Bio 111 Microbes and Society is a general education introductory biology course. The course does not have a pre-requisite.
b. Course competencies met:

1. Describe the process of scientific inquiry, its realm, and limitations.

2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

3. Identify structural characteristics of the major groups of microorganisms.

4. Explain and demonstrate the mechanisms of microbial growth and metabolism.

5. Describe microbial genetics, mutations, and DNA recombination.

6. Provide examples of physical, chemical, and antibiotic methods of microbial control.

7. Name foods that owe their existence to microbes and describe food spoilage, food preservation, and prevention of food-borne diseases.

8. Describe how microbial biotechnology is benefiting medicine and agriculture.

9. Identify the microbes associated with various biogeochemical cycles.

10. Describe how microbes are used in sanitation and waste removal, bioremediation, pollution, and water treatment.

11. Distinguish between specific and non-specific forms of disease resistance in host organisms.

12. Differentiate between bacterial and viral diseases.

c. Evidence in syllabus and textbook: The textbook (Alcamo’s Microbes and Society 3rd edition by Weeks) assumes little or no science background. The book was chosen specifically because it is written for general education introductory foundation course in biology.

Assigned Textbook Reading:
Chapter 1 The Microbial World: Surprising and Stunning
Chapter 2 Microbes in Perspective: Of Collectors and Classifiers
Chapter 3 Molecules of the Cell: The Building Blocks of Life
Chapter 4 The DNA Story: Germs, Genes, and Genomics
Chapter 5 Bacteria: The First Microbes
Chapter 6 Viruses: At the Threshold of Life
ASU [SG] Criteria BIO111

Chapter 7 Protists: A Microbial Grab Bag
Chapter 8 Fungi: Yeasts and Warm Fuzzies
Chapter 9 Growth and Metabolism: Running the Microbial Machine
Chapter 10 Microbial Genetics: New Genes for Germs
Chapter 14 Biotechnology and Industry: Microbes at Work
Chapter 16 Microbes and the Environment: No Microbes, No Life
Chapter 17 Disease and Resistance: The Wars Within
Chapter 18 Viral Diseases of Humans: AIDS to Zoster
Chapter 19 Bacterial Diseases of Humans: Slate Wipers and Current Concerns

II. Additional Criteria that must be met within the context of the course:

A. Stresses understanding of the nature of basic scientific issues.

a. How course meets spirit: Microbes and Society is an introductory biology course. Lectures and chapters covered in the course emphasize basic scientific issues.

b. Course competencies met:

1. Describe the process of scientific inquiry, its realm, and limitations.

2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

3. Identify structural characteristics of the major groups of microorganisms.

4. Explain and demonstrate the mechanisms of microbial growth and metabolism.

5. Describe microbial genetics, mutations, and DNA recombination.

6. Provide examples of physical, chemical, and antibiotic methods of microbial control.

7. Name foods that owe their existence to microbes and describe food spoilage, food preservation, and prevention of food-borne diseases.

8. Describe how microbial biotechnology is benefiting medicine and agriculture.

9. Identify the microbes associated with various biogeochemical cycles.

10. Describe how microbes are used in sanitation and waste removal, bioremediation, pollution, and water treatment.

11. Distinguish between specific and non-specific forms of disease resistance in host organisms.
12. Differentiate between bacterial and viral diseases.

c. Evidence in syllabus and textbook: Students are assessed on their understanding of the nature of science.

Assigned Textbook Reading:
Chapter 1 The Microbial World: Surprising and Stunning
Chapter 2 Microbes in Perspective: Of Collectors and Classifiers
Chapter 3 Molecules of the Cell: The Building Blocks of Life
Chapter 4 The DNA Story: Germs, Genes, and Genomics
Chapter 5 Bacteria: The First Microbes
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Chapter 16 Microbes and the Environment: No Microbes, No Life
Chapter 17 Disease and Resistance: The Wars Within
Chapter 18 Viral Diseases of Humans: AIDS to Zoster
Chapter 19 Bacterial Diseases of Humans: Slate Wipers and Current Concerns

B. Develops appreciation of the scope and reality of limitations in scientific capabilities

a. How course meets spirit: In Microbes and Society students conduct weekly laboratory exercises. Through these exercises students discover the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work. Students realize that science involves asking appropriate questions about the world and then developing scientific investigations to answer their question. Students ascertain that there is no fixed sequence of steps that all scientific investigations follow. Different kinds of questions suggest different kinds of investigations. Science seeks explanations that are empirically based and logically consistent.

b. Course competencies met:

1. Describe the process of scientific inquiry, its realm, and limitations.

2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.
3. Identify structural characteristics of the major groups of microorganisms.

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11. Distinguish between specific and non-specific forms of disease resistance in host organisms.

12. Differentiate between bacterial and viral diseases.

c. Evidence in syllabus and textbook: Students conduct weekly laboratory exercises. Grading criteria includes weekly laboratory quizzes and laboratory reports.
Lab 1-The Science of Salsa: Antimicrobial Properties of Salsa Components to Learn Scientific Methodology

In this laboratory exercise students use scientific methodology to evaluate the effectiveness of salsa components at inhibiting the growth of undesirable microorganisms. Tomato, onion, garlic, cilantro, and jalapeno are tested for antimicrobial properties against *Saccharomyces cerevisiae*, *Staphylococcus aureus*, *Bacillus cereus*, and *Escherichia coli*. Each salsa component is ethanol extracted and a modification of the Kirby-Bauer method of antimicrobial sensitivity is used. Following the initial exercise, students are given the opportunity to repeat the exercise using other spices such as cinnamon, clove, nutmeg, and coriander.

Lab 2-Diversity and Ubiquity of Microorganisms

This laboratory exercise is designed to demonstrate the ubiquitous nature of microorganisms and the ease at which they can be cultivated. Students sample and cultivate microorganisms from several locations. Students then identify the various growth characteristics these microorganisms produce when they are cultivated in broth and on solid media.

Lab 3-Organic Molecules

In this laboratory exercise students explore macromolecules and their monomers. Simple chemical tests are used to identify different macromolecules including an unknown.

Lab 4-Microscope and Cytology

In this lab students learn to use a light microscope. After they have mastered that skill, they use the microscope to view different cells. Students prepare wet-mounts, and look at prepared slides. Prokaryotic and Eukaryotic cell structure is studied, and Eukaryotic organelles are discussed. Students learn to distinguish between the two cell types as they compare and contrast them.

Lab 5-Membrane Transport

In this laboratory exercise students explore basic membrane structure and function. Students perform experiments that test the affect of size and temperature on diffusion. Students perform experiments with animal and plant cells that demonstrate the process of osmosis.

Lab 6-DNA Extraction and Flow of Information in a Cell

In this laboratory exercise DNA is isolated and precipitated from *Escherichia coli*. Students compare DNA and RNA structurally. Transcription and translation exercises are performed. DNA fingerprinting results are interpreted for crime scenes and paternity cases.
Lab 7-Enzymes

In this laboratory exercise students perform experiments using sucrase as the enzyme, sucrase as the substrate, and fructose and glucose as the products. A simple chemical test that was part of the organic molecule laboratory is used to detect fructose and glucose. Students study the affect of concentration, temperature, and pH on enzyme activity.

Lab 8-Fermentation

In this laboratory exercise students perform fermentation experiments using *Saccharomyces cerevisiae*. Students study the affect of sugar concentration and temperature on fermentation.

Lab 9-Controlling Microbial Growth

In this laboratory exercise students will use saturated paper disks to demonstrate the effect of antiseptics and disinfectants on *Staphylococcus aureus* and *Escherichia coli*. A modification of the Kirby-Bauer method of antimicrobial sensitivity is used.

Lab 10-Microbiology of Food

In this laboratory exercise students determine if salt has an inhibitory effect on bacterial growth. In this laboratory exercise sample of ground beef and milk will be tested for their bacterial content using the standard plate count procedure.

Lab 11-The Five Second Rule

Most people do not think about food borne illness until they become ill from unknowingly consuming contaminated food. If food falls to the floor put you pick it up in less than five seconds it is safe to eat? In this laboratory exercise students test the five second rule.

Lab 12-Microbes and the Environment

In this laboratory exercise students investigate the biodegradation process of polystyrene and biodegradable packing peanuts. A simple chemical test that was part of the organic molecule lab is used to detect starch. Students determine if live microorganisms are required for biodegradation.

Lab 13-Effectiveness of Hand Washing

In this laboratory exercise students examine the effectiveness of washing hands with water alone, soap and water, and hand sanitizer.
Lab 14-Transmission of Microorganisms through Toilet Paper

Some infectious diseases can be transmitted by infected hands when a person fails to wash their hands thoroughly after using the restroom. One of the drawbacks of toilet paper is its porosity, a factor that permits microorganisms to reach the finger surface even though the skin surface is not touched. In this laboratory exercise students will use yeast as a test organism and the presence of catalase as a marker to detect yeast. A simulated “wiping” will be performed, followed by a test for “infectious organisms”.

Lab 15-Microbial Transmission via Fomites

Fomites are a widely known mechanism for transmitting microorganisms during epidemics. In this laboratory exercise students will demonstrate how yeast cells are transmitted among various individuals by contaminated coins. Catalase is used as a marker for the yeast cells’ presence.
Official Course Description: MCCCDD Approval: 6-28-2011

BIO111 2011 Fall - 9999

LEC 4.0 Credit(s) 3.0 Period(s)
3.0 Load Acad
LAB 0.0 Credit(s) 3.0 Period(s)
2.4 Load

Microbes and Society

Examination of the science of microbes and the impact of microbes on human affairs. Topics include principles of microbial diversity, cell structure, growth and reproduction, global processes, disease, and prevention of disease.

Prerequisites: None.

Go to Competencies  Go to Outline

MCCCDD Official Course Competencies:

BIO111 2011 Fall - 9999   Microbes and Society

1. Describe and utilize the process of scientific inquiry, its realm, and limitations. (I)
2. Describe structural characteristics of the major groups of microorganisms. (II)
3. Explain and demonstrate the mechanisms of microbial growth and metabolism. (III, IV)
4. Describe the processes of microbial genetics, mutations, and DNA recombination. (V)
5. Describe physical, chemical, and antibiotic methods of microbial control. (VI)
6. Name foods that owe their existence to microbes and describe food spoilage, food preservation, and prevention of food-borne diseases. (VII)
7. Describe ways in which microbial biotechnology benefits medicine and agriculture. (VIII)
8. Identify the microbes associated with various biogeochemical cycles. (IX)
9. Describe how microbes are used in sanitation and waste removal, bioremediation, pollution, and water treatment. (IX)
10. Distinguish between specific and non-specific forms of disease resistance in host organisms. (X)
11. Differentiate between bacterial and viral diseases. (X)

Go to Description  Go to top of Competencies

MCCCDD Official Course Outline:
I. Scientific Investigation
   A. Process of scientific inquiry
   B. Formation of the hypothesis
   C. Inductive/deductive reasoning
   D. Data collection, analysis, and presentation

II. Major Groups of Microorganisms
   A. Bacteria
   B. Viruses
   C. Protists
   D. Fungi

III. Microbial Growth
   A. Patterns of growth and requirements
   B. Binary fission
   C. Viral lysis/lysogeny

IV. Microbial Metabolism
   A. Energy and enzymes
   B. Cellular respiration
   C. Fermentation
   D. Anaerobic metabolism
   E. Photosynthesis

V. Microbial Genetics
   A. DNA replication
   B. Protein synthesis
   C. Mutation
   D. DNA Recombination

VI. Controlling Microbial Growth
    A. Physical and chemical methods
    B. Antibiotics and antibiotic resistance

VII. Microbes and Food
    A. Foods of microbial origin
    B. Food preservation
    C. Food safety

VIII. Microbes at Work
    A. Genetic engineering and biotechnology
    B. Microbes and medicine
    C. Microbes and agriculture

IX. Microbes and the Environment
    A. Microbes and the biogeochemical cycles
    B. Sanitary and waste facilities
    C. Bioremediation
    D. Water treatment

X. Disease and Resistance
    A. Nonspecific resistance to disease
    B. Specific resistance and the immune system
C. Human diseases
1. Viral Diseases
2. Bacterial diseases
3. Parasitic diseases
BIO 111 MICROBES AND SOCIETY SYLLABUS
MESA COMMUNITY COLLEGE Southern & Dobson Campus
FALL 2011 (8/23/11 – 12/16/11)

LECTURE:  TR 12:00pm - 1:15pm  LS 201  Section # 27926
LAB:  F 10:30am -1:20pm  LS 105  Section # 27927

INSTRUCTOR:  Dr. Jill Raymond
E-MAIL: jraymond@mesacc.edu
OFFICE PHONE: 480-461-7103
OFFICE: NU 189
OFFICE HOURS:
  M by appointment; W and F 7:00am-8:00am
  T and R 10:45am-11:45am

OFFICIAL COURSE DESCRIPTION: Examination of the science of microbes and the impact of microbes on human affairs. Topics include the principles of microbial diversity, cell structure, growth and reproduction, global processes, disease, and prevention of disease.

COURSE PREREQUISIT: None

REQUIRED TEXTBOOKS:


BIO 111 Microbes and Society Laboratory Manual by Jill Raymond

You are expected to bring your lab manual to each lab session. The textbook is also on reserve in the library for a 2-hour loan. There is also a textbook and lab manual in the Life Science study room (NU-146).

REQUIRED LAB SUPPLIES:
Lab coat, safety glasses and closed-toe shoes. Lab coat and safety glasses will be provided for you to use for the semester and must be left in lab for the semester.

COURSE CURRICULUM OBJECTIVES:
1. Describe the process of scientific inquiry, its realm, and limitations.

2. Practice principles of scientific inquiry while conducting weekly laboratory activities and experiments. Analyze and report data generated during laboratories and experiments.

3. Identify structural characteristics of the major groups of microorganisms.

4. Explain and demonstrate the mechanisms of microbial growth and metabolism.
5. Describe microbial genetics, mutations, and DNA recombination.

6. Provide examples of physical, chemical, and antibiotic methods of microbial control.

7. Name foods that owe their existence to microbes and describe food spoilage, food preservation, and prevention of food-borne diseases.

8. Describe how microbial biotechnology is benefiting medicine and agriculture.

9. Identify the microbes associated with various biogeochemical cycles.

10. Describe how microbes are used in sanitation and waste removal, bioremediation, pollution, and water treatment.

11. Distinguish between specific and non-specific forms of disease resistance in host organisms.

12. Differentiate between bacterial and viral diseases.

STUDENT RESPONSIBILITIES:
You are expected to follow the Maricopa District and Mesa Community College policies as outlined in the College Catalog and Student Handbook. You are also expected to read and sign a statement that you accept the terms and conditions of this class. You are responsible for your learning; however, your instructor will facilitate that process. It is expected that you will ask questions and seek clarification of the material and assignments. In order for me to help you, please notify me if you are having difficulty as soon as possible.

ATTENDANCE:
You are expected to attend all lecture and lab sessions for which you are registered. Attendance is NOT OPTIONAL. You may not enter lab or lecture more than 5 minutes after the start time; if you enter points will be deducted from your course grade. You are expected to be prompt and participate until the end of the class session. It will be your responsibility to sign an attendance sheet at each lecture and lab session; if you do not sign in points will be deducted from your course grade. If you have a time conflict with your scheduled lecture and lab times and any other obligation, you should drop the class and take this course at another time.

WITHDRAWAL POLICY:
It is the responsibility of the student to officially withdraw if the course cannot be completed. The instructor may withdraw any student who misses more than 3 classes. MCC, along with the other Maricopa Community Colleges, will charge tuition and fees when a student is dropped from classes after the 100% refund period (whether through the purge process for non-payment or instructor removal for failure to attend). Dates for 100% refund vary based on the length of the class and the date that it starts. Check the College Catalog to determine refund dates.
CLASS COURTESY:
Students are expected to treat classmates and the instructor with courtesy and respect. Displays of rudeness and immaturity will not be tolerated. Please turn off all cell phones and pagers before entering the class. Do not text or surf internet during the class session. If there is an emergency situation that requires a cell phone to be left on, please turn it on low, then take the call in the hallway. Students from other classes or visitors (including children of students) are not allowed in lecture or laboratory classes. Additional students or visitors are considered an insurance liability since the college carries insurance only on students enrolled in classes while they are in session.

CHEATING:
Your registration for the class is regarded as an agreement to comply with the regulations of the college. Cheating or disruptive behavior will not be tolerated at any level, in any form, at any time. This includes allowing others to copy your work and plagiarism. At the discretion of the instructor, any form of academic cheating or disruptive behavior will result in a "0" for the activity OR an "F" for the course. Any subsequent incident will result in the student being sent to the Division Chairperson and/or the Dean and withdrawal from the course. Discussing assignments is not cheating. However, when working on assignments together, you must process the information and put the answers in your own words. You must be able to defend your answer. Although the answers may be similar when they represent group thoughts, it is obvious when copying has occurred and all papers will receive a “0”.

LECTURE AND LABORATORY SCHEDULE:

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<tr>
<th>Week</th>
<th>Lecture Topic</th>
<th>Assigned Textbook Chapters</th>
<th>Laboratory Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Microbial World</td>
<td>1</td>
<td>Scientific Methodology</td>
</tr>
<tr>
<td>2</td>
<td>Microbes in Perspective</td>
<td>2</td>
<td>Diversity and Ubiquity of Microorganisms</td>
</tr>
<tr>
<td>3</td>
<td>Molecules of the Cell</td>
<td>3</td>
<td>Organic Molecules</td>
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<tr>
<td>4</td>
<td>Bacteria Viruses</td>
<td>5-6</td>
<td>Microscope and Cytology</td>
</tr>
<tr>
<td>5</td>
<td>Protists Fungi</td>
<td>7-8</td>
<td>Membrane Transport</td>
</tr>
<tr>
<td>6</td>
<td>The DNA Story</td>
<td>4</td>
<td>DNA Extraction and Flow of Information in a Cell</td>
</tr>
<tr>
<td>7</td>
<td>Growth and Metabolism</td>
<td>9</td>
<td>Enzymes</td>
</tr>
<tr>
<td>8</td>
<td>Microbial Genetics</td>
<td>10</td>
<td>Fermentation</td>
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<tr>
<td>9</td>
<td>Controlling Microbes</td>
<td>11</td>
<td>Controlling Microbial Growth</td>
</tr>
<tr>
<td>10</td>
<td>Microbes and Food Food Preservation and Safety</td>
<td>12-13</td>
<td>Microbiology of Food</td>
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<td></td>
<td>Biotechnology and Industry Microbes and Agriculture</td>
<td>14-15</td>
<td>The Five Second Rule</td>
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<tr>
<td>12</td>
<td>Microbes and the Environment</td>
<td>16</td>
<td>Microbes and the Environment</td>
</tr>
<tr>
<td>13</td>
<td>Disease and Resistance</td>
<td>17</td>
<td>Effectiveness of Hand Washing</td>
</tr>
<tr>
<td>14</td>
<td>Viral Diseases</td>
<td>18</td>
<td>Transmission of Microorganisms Through Toilet Paper</td>
</tr>
<tr>
<td>15</td>
<td>Bacterial Diseases</td>
<td>19</td>
<td>Microbial Transmission Via Fomites</td>
</tr>
<tr>
<td>16</td>
<td>FINAL EXAM</td>
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**GRADING SCALE:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>89.5 - 100</td>
</tr>
<tr>
<td>B</td>
<td>79.5 - 89.4</td>
</tr>
<tr>
<td>C</td>
<td>69.5 - 79.4</td>
</tr>
<tr>
<td>D</td>
<td>59.5 - 69.4</td>
</tr>
<tr>
<td>F</td>
<td>0 - 59.4</td>
</tr>
</tbody>
</table>

*C or better is needed to transfer for credit*

**GRADING CRITERIA:**

Students will be notified by the instructor of any changes in course requirements or policies or class lecture/lab schedule.

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Lecture Exams 4@100 points each</td>
<td>400</td>
</tr>
<tr>
<td>Final Lecture Exam</td>
<td>100</td>
</tr>
<tr>
<td>Class Assignments 4@10 points each</td>
<td>40</td>
</tr>
<tr>
<td>Lecture Quizzes 4@10 points each</td>
<td>40</td>
</tr>
<tr>
<td>Lab Quizzes</td>
<td>75</td>
</tr>
<tr>
<td>Lab Reports</td>
<td>175</td>
</tr>
<tr>
<td><strong>Total Points in the Course</strong></td>
<td><strong>830</strong></td>
</tr>
</tbody>
</table>

I will **not** give EXTRA CREDIT ASSIGNMENTS in this class.

**ASSESSMENTS:**

**Exams**

The 100 percentage-point exam format will be objective questions as well as short answer questions. Information on exams will come from lecture material and reading assignments. You will need a green Scantron Form for each lecture exam.
The final exam format will be objective questions only. The final exam will be given during Finals Week on **Tuesday December 13, 2011 12:00pm-1:50 pm**. There is no make-up final exam. You will need a green Scantron Form for the final exam.

If there is an unavoidable emergency or if there is a conflict with a school sponsored activity, it is the student’s responsibility to contact the instructor NO LATER THAN THE EXAM DAY. A make-up exam may be given at the discretion of the instructor. No make-up exams will be given after the exams have been graded and reviewed by the class. No one will receive a passing course grade if 2 or more exams are missed. Exams will be handed back to the students as soon as possible for review, but **must** be returned to the instructor immediately following the review. If an exam is not returned, a “0” will be recorded for that score.

**Quizzes**
Lecture quizzes will be given approximately half way through the information for the lecture exams. The quiz format will be objective questions and will be taken on WebCT. Your participation is required to acquire necessary lab skills and your preparation for the labs is mandatory in order to achieve those skills. The online lab quiz format will be objective questions and will be taken on WebCT. You must complete the online lab quiz for the lab prior to your laboratory period. Quizzes will be available for at least 24 hours prior to the start of your lab period and must be completed before the start of your lab period. Laboratory quizzes and exercises cannot be made up.

**Class Assignments:**
You will be completing four class assignments. More information is available on WebCT.

**Lab Reports:**
You will be preparing a lab report for all the laboratory exercises.

**LAB SAFETY:**
You are expected to properly prepare for the lab activity by reading the exercise **BEFORE** lab begins. Failure to complete this preparation will result in a lowering of the lab grade. The lack of preparation takes away valuable lab time and can result in unnecessary health risks to you and your classmates. Also, keeping your work space clear of clutter and maintaining a clean lab environment is paramount. Failure to clean your work area and replace lab materials may also result in lowering of the lab grade.

You will be working with live microorganisms that are potentially pathogenic. Safety precautions must be followed at all times when working in the lab. **If you do not follow the laboratory safety rules, the instructor will remove you from class which will result in a "0" for the activity OR an "F" for the course.**

In the course of the Microbiology laboratory exercises, **you will be exposed to microorganisms that are capable of causing disease** under certain circumstances. If you follow directions and utilize the proper microbiological techniques that you are taught, you reduce your risk. However,
if you are an immunocompromised individual (undergoing chemotherapy, taking corticosteroids, are pregnant, have leukemia, are HIV positive, etc.) your risk is greater than that of an average healthy adult. If you have ANY reason to suspect that your immune system is not functioning at the normal adult level of immunity, consult your physician for advice as to whether or not you should take Microbiology at this time. If you suspect that your immune system is not functioning at the normal adult level, but after consultation with a physician decide to remain enrolled in Microbiology, inform your instructor of your unusual status.

A long-sleeved lab coat or smock, protective eyewear and exam gloves are required and must be worn whenever you are working with live microbes in the laboratory. Wearing closed-toed shoes (rather than sandals etc.) is mandatory in laboratory class. A locked lab drawer will be assigned to you for the semester to store your lab coat and eyewear. These items must remain in the lab for the semester. Tell the instructor if you have an allergy to latex, in order to provide you with latex-free gloves.

LAB RULES:
1. No food or drink under any circumstances is permitted in lab.
2. Immediately upon entering the lab put on your lab coat and closed-toe shoes. Have your protective eyewear and gloves at your table.
3. Backpacks/purses must be placed on the shelves under the lab benches, out of the way of chairs and walk areas.
4. Lab benches must be disinfected before and after every lab.
5. Return all lab materials IMMEDIATELY after use!
6. Remove tape from all glassware before placing it in the wash rack.
7. Microscopes must be clean and stored properly after each use.
8. Students may not be in the lab without an instructor present.

Repeat offenders will lose 5 points per incident.

STUDENT SUPPORT SERVICES:
Information regarding all support services provided to students by MCC can be found in the Class Schedule or online at www.mc.maricopa.edu.

MCC Counseling Center is located in the Building 36 (in the courtyard by the Grounds for Thought coffee hut entrance). They provide workshops on Study Skills, Test Taking Strategies and other strategies for Student Success. (480-461-7588)

Tutoring Center in the Library/High-Tech Center, phone (480) 461-7492. Depending on the availability of qualified employees and funding, tutors may be available free of charge. Appointments are necessary for this service.

Disability Services is located in Bldg 37, on the east side of the courtyard next to the Kirk Student Center. If you have or think you have a disability, including a learning disability, please contact them to make an appointment for appropriate accommodations. 480-461-7447 www.mc.maricopa.edu/disability
Early Alert Program (EARS) Mesa Community College is committed to the success of all our students. Numerous campus support services are available throughout your academic journey to assist you in achieving your educational goals. MCC has adopted an Early Alert Referral System (EARS) as part of a student success initiative to aid students in their educational pursuits. Faculty and Staff participate by alerting and referring students to campus services for added support. Students may receive a follow up call from various campus services as a result of being referred to EARS. Students are encouraged to participate, but these services are optional. Early Alert Web Page with Campus Resource Information can be located at: http://www.mesacc.edu/students/ears or at the “Early Alert” selection at the mymcc link from MCC’s home page.

Life Sciences Study Room is in the South end of the Nursing Building (NU146) in the Life Science Department. There are microscopes and specimen slides, textbooks and lab manuals for your use. This is where you can review your completed exams and quizzes. This is also a good place to meet others for group work and peer tutoring.

HelpCenter/Tech Support Services are available in the HelpCenter and over the phone. The HelpCenter is located in the connector between the AS building and the library. The HelpCenter phone number is 480-461-7217. You can also reach them via email HelpCenter@mesacc.edu and via the web www.mesacc.edu/HelpCenter.

LEARNING RESOURCES:
1. **WebCT**—It is an online resource for the instructor’s syllabus, class/lab schedule, other handouts, etc. Access WebCT by typing your Username and Password into MyMCC portal. Then click on the WebCT link for this class. There are tutorials available online once you are into the WebCT site.
2. **www.mesacc.edu/dept/d22/micro/resources.html**
3. **The textbook** online resource is http://microbiology.jbpub.com/microbes3/