

COURSE SYLLABUS

| | | | | |
|---|--|---|---|--------------------------|
| Course Title: | Microbiology | | Date submitted: | May 2014 (AAC: 14-81) |
| Department: | Mathematics and Science | | | |
| Curriculum: | Biology | | | |
| Course Descriptors: Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system. | Course Code: (eg. ACC 101) BIO*235 | | Prerequisites: C- or better in Anatomy & Physiology I (BIO*211) | |
| | Course Type: X | | | |
| | A: Clinical B: Lab D: Distance Learning I: Individual/Independent L: Lecture N: M: Seminar Internship P: Practicum U: Studio X: Combined Lecture/Lab Y: Combined Lecture/Clinical/Lab Z: Combined Lecture/Studio | | Corequisites: None | |
| | Elective Type: G/LA/S | | | |
| | E: English FA: Fine Arts HI: History HU: Humanities LA: Liberal Arts FL: Foreign Language M: Math S: Science SS: Social Science G: General | | Other Requirements: Lab Coat; Safety Glasses | |
| | Credit Hours: 4 | | | |
| | Developmental: (yes/no) No | | | |
| | Lecture: 3 | | | |
| | Clinical: 0 | | | |
| | Lab: 3 | | | |
| Contact Hours: | | Class Maximum: 36/18 or 20/20 | | |
| Studio: 0 | | | | |
| Other: 0 | | | | |
| TOTAL: 6 | | Semesters Offered: F/S/Su | | |
| Class Maximum: | | | | |
| Ability-Based Education (ABE) Statement: | | At Tunxis Community College students are assessed on the knowledge and skills they have learned. The faculty identified the General Education Abilities critical to students' success in their professional and personal lives. In every class, students are assessed on course abilities, sometimes program abilities, and, in most classes, at least one General Education Ability. Students will receive an evaluation of the degree to which they have demonstrated or not demonstrated that General Education Ability. | | |
| Catalog Course Description: | | Introduction to microorganisms: bacteria, fungi, protozoa, viruses, microscopic algae, and some multicellular parasites. Bacteria and their role in health and disease are emphasized. Skills of observing, gathering, and reporting data, drawing conclusions, identifying problems, and procedure evaluation emphasized. | | |
| Topical Outline: List course content in outline format. | | 1. Introduction and History 2. Chemistry Review 3. Classification 4. Prokaryotic Cells vs. Eukaryotic Cells | | |

5. Microbial Metabolism
6. Microbial Growth & Nutrition
7. Control of Microbial Growth
8. Microbial Genetics
9. Viruses
10. Principles Of Disease and Epidemiology
11. Mechanisms of Pathogenicity
12. Nonspecific Defenses
13. Immune Response
14. Applications of Immunology
15. Disorders of Immune System
16. Representative Diseases of Microbial Origen

Laboratory:

1. Microscope and Microbiological Techniques
2. Survey of Microorganisms (Prepared Slides & Living Organisms)
3. Aseptic Technique and Manipulation of Microorganisms
4. Growth and Nutritional Requirements
5. Staining and Observation of Microorganisms
6. Methods of Microbial Control
7. Evaluation of Drinking Water
8. Synthetic Epidemic
9. Susceptibility to Caries
10. Field Trip/s (State Health Labs)
11. HIV Lab

Upon successful completion of this course, the student will be able to do the following:

COURSE:

1. connect the classification of microbes to their evolutionary relationships
2. describe the use of the microscope and staining techniques to visualize and identify bacteria
3. identify parts of a prokaryotic cell and contrast a prokaryotic and a eukaryotic cell
4. illustrate the phases of microbial growth and the control of growth
5. differentiate between aerobic respiration and fermentation and describe the end products of both reactions
5. explain oxidation and reduction reactions as applicable to metabolic patterns
6. define biotechnology using examples and techniques from microbial genetics
7. using the DNA model, explain how recombinant bacteria are produced
8. illustrate and give examples of the life cycle of viruses
9. explain mechanisms used by microbes to cause disease and the immune response of the human body
10. manipulate bacterial cultures according to standard procedures

PROGRAM: *(Numbering reflects Program Outcomes as they appear in the college catalog)*

N/A

GENERAL EDUCATION: *(Numbering reflects General Education Outcomes as they appear in the college catalog)*

8. **Scientific Knowledge** - Students will gain a broad base of scientific knowledge and methodologies in the natural sciences. This will enable them to develop scientific literacy, the knowledge and understanding of scientific concepts and processes essential for personal decision making and understanding scientific issues.

Outcomes:
Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.

| | |
|---|--|
| | <p>Demonstrates: Consistently recalls and correctly applies discipline-specific terms, relevant theories, laws, and concepts to analyze and explain scientific information.</p> <p>Does Not Demonstrate: Inconsistently recalls or incorrectly applies discipline-specific terms, relevant theories, laws, and concepts to analyze or explain scientific information.</p> <p>9. Scientific Reasoning - Students will become familiar with science as a method of inquiry. Students will develop a habit of mind that uses quantitative skills to solve problems and make informed decisions.</p> <p>Demonstrates: Identifies and successfully executes components of the scientific method (hypothesis, procedure, observations, data analysis, and conclusions) to investigate real-world phenomena.</p> <p>Does Not Demonstrate: Misidentifies or poorly executes components of the scientific method (hypothesis, procedure, observations, data analysis, or conclusions) to investigate real-world phenomena.</p> |
| <p>Evaluation: List how the above outcomes will be assessed.</p> | <p>Assessment will be based on the following criteria: examinations quizzes assignments during class and lab</p> |
| <p>Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.</p> | <p>Required: Microscopes, Slides, Bacterial Cultures, Bunsen Burners Desired: Smartboard</p> |
| <p>Textbook(s)</p> | <p>Textbook: Refer to Current Academic Year Printout Laboratory Textbook: <i>Benson's Microbiological Applications</i>; Customized , (Latest Edition)</p> |