

COURSE SYLLABUS

Course Title:	Microbiology		Date submitted:	May 2019 (AAC: 19-25)	
Department:	Biology, Chemistry, Allied Health, and Medical				
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:		
	Course Type:	X	C- or better in General Biology I (BIO*121) AND C- or better in Concepts of Chemistry (CHE*111) or General Chemistry I (CHE*121)		
	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				
	Elective Type:	G/LAS/S			
	E: English FA: Fine Arts FL: Foreign Language G: General HI: History HU: Humanities LAS: Liberal Arts & Sciences M: Math S: Science SS: Social Science				
	Credit Hours:	4	Corequisites:		
	Developmental: (yes/no)	No	None		
	Lecture:	3			
	Clinical:	0			
	Lab:	3			
Studio:	0				
Contact Hours:	Other: 0				
	TOTAL: 6	Other Requirements:			
Class Maximum:	36/18 or 20/20	Lab Coat; Safety Glasses			
Semesters Offered:	F/S/Su				
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 evaluating procedures are emphasized.				
Topical Outline: List course content in outline format.	<ol style="list-style-type: none"> 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 the Immune System
16. Representative Diseases of Microbial Origin

Laboratory:

1. Microscopy and Cell Culture Techniques
2. Survey of Microorganisms (Prepared Slides & Living Organisms)
3. Aseptic Technique and Manipulation of Microorganisms
4. Staining and Observation of Microorganisms
5. Motility Testing
6. Biochemical Testing
7. Methods of Microbial Control
8. Analysis of Microbiota (Throat Swab, Handwashing, & Caries Testing)
9. Food Microbiology
10. Evaluation of Drinking Water
11. ELISA
12. Gel Electrophoresis
13. Synthetic Epidemic

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

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
6. explain oxidation and reduction reactions as applicable to metabolic patterns
7. define biotechnology using examples and techniques from microbial genetics
8. explain how recombinant DNA is produced and transferred into bacterial cells
9. illustrate and give examples of the replication cycle of viruses
10. explain mechanisms used by microbes to cause disease and the immune response of the human body
11. 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.

Demonstrates: Consistently recalls and correctly applies discipline-specific terms, relevant theories, laws, and concepts to analyze and explain scientific information.

Does Not Demonstrate: Inconsistently recalls or incorrectly applies discipline-specific terms, relevant theories, laws,

	<p>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:</p> <p>examinations quizzes assignments during class and lab lab notebooks or reports</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>Lecture Textbook: Cowan, <u>Microbiology: a Systems Approach</u>, McGraw Hill (Latest edition) Laboratory Manual: Brown, <u>Benson's Microbiological Applications</u> custom version, McGraw Hill (Latest edition)</p>