

Microbiology MICR 202 Lecture Course Outcome Guide (COG)

Course:	MICR 202 Microbiology Lecture	Credits:	3	Date Updated	April 2016
Course Description:	Prerequisite: C or higher in a course in chemistry or biology or instructor approval. Topics include microbial survey, bacterial structure and physiology, viral and bacterial diseases, immune system, personal and community health. A study of the characteristics and importance of microorganisms with emphasis on their identification, control, and relationships to health and disease. This course and BIOL 302 are equivalent. A general survey on the morphology and physiology of selected microbes with major emphasis on the medical aspects of bacteria, viruses, and fungi to humans. Corequisite: MICR 202 Microbiology Lab 1. Gain an appreciation of the diversity of microbes; in the context of this course, “microbes” include diverse organisms, e.g., viruses, bacteria, fungi, Protista, and small worms. 2. Describe the structure and function of microbes. 3. Understanding diagnostic tests and procedures used to identify microbes. 4. Understanding the relationship between microbes, disease and the disease process. 5. The role of microbes in microbial ecology. 6. Understanding the roles of microbes in community health.				
Concepts and Issues	Process Skills	Assessment Tasks	Intended Outcomes		
			Course	General Education or Program	Institutional

<p>1. Microbial Ecology including mineral cycles.</p> <p>2. Industrial uses of microbes.</p> <p>3. Chemistry of Life Including Atoms Molecules and Bonding.</p> <p>4. Pathogenicity and disease</p> <p>5. Immunology</p> <p>6. Cell Biology Structure and Function Eukaryotic Prokaryotic</p> <p>7. Microbial Metabolism (including . Energetics-cell respiration and photosynthesis)</p> <p>8. Microbial Genetics (including transcription and translation) and evolution.</p> <p>9. Bacterial, viral, and parasitic relationships with</p>	<p>Study effectively</p> <p>Scientific method, scientific notation, metric system.</p> <p>Describe how microbes are essential in the cycle of minerals and molecules in the environment.</p> <p>List and describe how microbes are used in industry. Explain how water and sewage are treated include the use of microbes in the process.</p> <p>Historical overview of microbiology.</p> <p>Know Atomic structure, bonding, Molecular Structure and how this leads to chemical properties and biological functions. Know the role of biological molecules in living organisms.</p> <p>Apply Koch's postulates to etiology of disease.</p> <p>Describe disease and Pathogenicity. List the components of the immune system and describe their functions</p>	<p>1. Complete assignments of readings and worksheets, worksheets ("portfolio"), term paper, study guides, movies.</p> <p>2. Lecture quizzes and lecture attendance.</p> <p>3. Lecture exams with objective and subjective questions.</p> <p>4. Case studies.</p>	<p>1. Practice the application of Microbiological information to solve health issues in life (personal and professional).</p> <p>2. Use scientific methods to quantitatively describe microbial characteristics, processes and understand their relationship to the identification of microbial species.</p> <p>3. Use an understanding of research and laboratory experiences to organize, evaluate, and present data and information to illustrate and articulate basic microbiology concepts.</p> <p>4. Practice the application of biological information in other classes</p>	<p>1. Students will use reasoning skills to analyze and solve problems.</p> <p>2. Students will apply health-related knowledge to physical and mental well-being.</p>	<p>1. Students will use reasoning skills to analyze and solve problems.</p> <p>2. Students will apply health-related knowledge to physical and mental well-being.</p>
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<p>human health and disease, treatment; and basic immunology.</p> <p>10. Molecular mechanisms of Cancer</p> <p>11. Microbial classification including domains.</p> <p>12. Bacterial identification, morphology,</p> <p>.</p>	<p>including how they coordinate.</p> <p>Describe normal flora, examples, their function and nosocomial infections.</p> <p>Know and identify the components of cells and explain their functions. Understand the relationship between cell structure and function. Include bacterial morphology and physiology</p> <p>Describe the structure and function of viruses. Explain their role in disease including the molecular mechanism.</p> <p>Compare and contrast the types of Hepatitis. Describe the methods of transmission.</p> <p>Describe the processes by which materials are transported across cell membranes.</p> <p>Describe spontaneous generation and how it was disproved.</p>				
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	<p>Apply transcription and translation to the process of metabolism. Describe microbial genetics. Compare and contrast viral, prokaryotic and eukaryotic genetics.</p> <p>Describe endospore formation</p> <p>Describe cancer causes and the molecular mechanisms.</p> <p>Describe HIV and include the molecular mechanism of infection</p> <p>Describe microbial metabolism. Discuss, compare and contrast microbial energetics including Cellular Respiration and Photosynthesis.</p> <p>Describe microbial growth and the conditions, nutrients required and factors that influence it.</p> <p>Describe the classification system used to identify bacteria</p>				
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	<p>Describe and list examples of viruses, bacterial, fungi and Protista and the diseases they cause. Discuss how microbial structure relates to disease treatment and disinfection.</p> <p>Describe common infectious diseases/disorders of the human body and the symptoms, causes and treatment. Discuss the use and overuse of antimicrobial drugs. List microbial diseases based on the body system affected and include their cause and symptoms.</p> <p>Describe the various types of microbes, especially those causing common diseases, including their gram stain, shape, clustering patterns and disease they cause.</p> <p>Integrate the process of evolution in the development and adaptation of living organisms.</p>				
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	<p>Describe and discuss the use of various types of microscopy, stains, and media for study of bacteria.</p> <p>Compare the cell components of eukaryotes and prokaryotes. Describe endospore formation</p>				
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