

CORE CURRICULUM COMPONENT APPLICATION
Texarkana College

Part I: Course Information/ This course is not currently offered.

Course Type

- Existing/Restructured
 New Course

Course Prefix & Number: **BIOL 2321**

Texas Common Course Number (TCCN): **2321**

Course Title: **Microbiology for Science Majors**

Course Catalog Description

Microbiology for Science Majors (4,3,3). Principles of microbiology, including metabolism, structure, function, genetics, and phylogeny of microbes. The course will also examine the interactions of microbes with each other, hosts, and the environment. Laboratory activities will reinforce principles of microbiology, including metabolism, structure, function, genetics, and phylogeny of microbes. The course will also examine the interactions of microbes with each other, hosts, and the environment.

Course Prerequisites:

Available Online?

- Yes
 No

Part II: THECB Course Objectives

Upon successful completion of this course, students will:

1. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
2. Identify unique structures, capabilities, and genetic information flow of microorganisms.
3. Compare the life cycles and structures of different types of viruses.
4. Discuss how microscopy has revealed the structure and function of microorganisms.
5. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
6. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
7. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.
8. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.

CORE CURRICULUM COMPONENT APPLICATION

Texarkana College

9. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
10. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
11. Communicate effectively the results of scientific investigations.
12. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
13. Identify unique structures, capabilities, and genetic information flow of microorganisms.
14. Compare the life cycles and structures of different types of viruses.
15. Discuss how microscopy has revealed the structure and function of microorganisms.
16. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
17. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
18. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.
19. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.

Part III: THECB Skill Objectives

- 1. Critical Thinking Skills:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- 2. Communication Skills:** to include effective development, interpretation and expression of ideas through written, oral and visual communication
- 3. Empirical and Quantitative Skills:** to include applications of scientific and mathematical concepts.
- 4. Teamwork:** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Part IV: Course Student Learning Outcomes (SLO)

Upon successful completion of this course, students will:

1. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
2. Identify unique structures, capabilities, and genetic information flow of microorganisms.
3. Compare the life cycles and structures of different types of viruses.
4. Discuss how microscopy has revealed the structure and function of microorganisms.
5. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
6. Describe evidence for the evolution of cells, organelles, and major metabolic pathways

CORE CURRICULUM COMPONENT APPLICATION

Texarkana College

- from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
7. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.
 8. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.
 9. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
 10. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
 11. Communicate effectively the results of scientific investigations.
 12. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
 13. Identify unique structures, capabilities, and genetic information flow of microorganisms.
 14. Compare the life cycles and structures of different types of viruses.
 15. Discuss how microscopy has revealed the structure and function of microorganisms.
 16. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
 17. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
 18. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.
 19. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.

Skill Objective:	Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
THECB Course Objective	
Course Student Learning Outcome	
General Learning Activities	
Assessment <i>Must Include Assignment & Rubric</i>	

Skill Objective:	Communication Skills: to include effective written, oral, and visual communication
THECB Course Objective	
Course Student Learning Outcome	

CORE CURRICULUM COMPONENT APPLICATION
Texarkana College

General Learning Activities	
Assessment <i>Must Include Assignment & Rubric</i>	

Skill Objective:	Empirical and Quantitative Skills: to include applications of scientific and mathematical concepts.
THECB Course Objective	
Course Student Learning Outcome	
General Learning Activities	
Assessment <i>Must Include Assignment & Rubric</i>	

Skill Objective:	Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
THECB Course Objective	
Course Student Learning Outcome	
General Learning Activities	
Assessment <i>Must Include Assignment & Rubric</i>	