CORE CURRICULUM COMPONENT APPLICATION
Texarkana College

Part I: Course Information

Course Type
☒ Existing/Restructured
☐ New Course

Course Prefix & Number: **BIOL 1306**

Texas Common Course Number (TCCN): **1306**

Course Title: **Biology for Science Majors I**

Course Catalog Description

Biology for Science Majors I (4,3,3). An integrated approach to cell and molecular biology with emphasis on biological chemistry, cell structure and function, genetics and evolutionary theory. Students who do not have a strong background in high school chemistry should enroll in Chemistry 1411 as a corequisite.

Course Prerequisites:
None

Available Online?
☐ Yes
☒ No

Part II: THECB Course Objectives

Upon successful completion of this course, students will:

1. Describe the characteristics of life.
2. Explain the methods of inquiry used by scientists.
3. Identify the basic requirements of life and the properties of the major molecules needed for life.
4. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
5. Describe the structure of cell membranes and the movement of molecules across a membrane.
6. Identify the substrates, products, and important chemical pathways in metabolism.
7. Identify the principles of inheritance and solve classical genetic problems.
8. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
9. Describe the unity and diversity of life and the evidence for evolution through natural selection.
10. Apply scientific reasoning to investigate questions and utilize scientific tools such as

microscopes and laboratory equipment to collect and analyze data.
11. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
12. Communicate effectively the results of scientific investigations.
See attached syllabus.

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)
1. Describe the characteristics of life.
2. Explain the methods of inquiry used by scientists.
3. Identify the basic requirements of life and the properties of the major molecules needed for life.
4. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
5. Describe the structure of cell membranes and the movement of molecules across a membrane.
6. Identify the substrates, products, and important chemical pathways in metabolism.
7. Identify the principles of inheritance and solve classical genetic problems.
8. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
9. Describe the unity and diversity of life and the evidence for evolution through natural selection.
10. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
11. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
12. Communicate effectively the results of scientific investigations.
13. Describe the characteristics of life.
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Skill Objective:	**Critical Thinking Skills:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
THECB Course Objective	(SLO #10) Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
Course Student Learning Outcome	(SLO #10) Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
General Learning Activities	Enzyme lab where rates of catalase activity are investigated. Temperature, ph, concentration of substrate are examined. See attached activity.
Assessment ***Must Include Assignment & Rubric***	Grade, included rubric. See attached rubric.

Skill Objective:	**Communication Skills:** to include effective written, oral, and visual communication
THECB Course Objective	(SLO# 4). Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells
Course Student Learning Outcome	(SLO# 4). Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells
General Learning Activities	As essay question on the test, the student draws or describes the process of meiosis for a diploid organism for even numbers 2-10 (including interphase). See attached activity.
Assessment ***Must Include Assignment & Rubric***	Test essay question, included rubric. See attached rubric.

Skill Objective:	**Empirical and Quantitative Skills:** to include applications of scientific and mathematical concepts.
THECB Course Objective	(SLO #7)Identify the principles of inheritance and solve classical genetic problems.

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Course Student Learning Outcome	(SLO #7)Identify the principles of inheritance and solve classical genetic problems.
General Learning Activities	Student works Mendelian genetics problems. See attached activity.
Assessment ***Must Include Assignment & Rubric***	Test questions, included rubric. See attached rubric.

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	(SLO #17) Describe the structure of cell membranes and the movement of molecules across a membrane.
Course Student Learning Outcome	(SLO #17) Describe the structure of cell membranes and the movement of molecules across a membrane.
General Learning Activities	Students work in groups of four, using electrical conductivity probes to track ions across membranes into sucrose or water solutions. The students determine rates of diffusion with different concentration gradients, compare with sucrose and water solutions. See attached activity.
Assessment ***Must Include Assignment & Rubric***	Grade and included rubric. See attached rubric.