

**College of Sciences**  
**Student Learning Outcomes, AY 2008-2009**

**Agriculture –**

1. Graduates will be able to manage herd/flock reproductive health, including a working knowledge of nutrition, genetics, reproduction, and animal husbandry.
2. Students will understand the factors affecting meat quality and food safety.
3. Students will understand the principles of managing rangelands and grazing animals on rangelands.
4. Graduates of the Agricultural Business degree will understand the economic factors affecting profit in the ranching industry.
5. Graduates of the Natural Resource Management degree will be able to successfully manage hunting operations.
6. Graduates will be successful in acquiring acceptance into Graduate or Veterinary School.
7. Graduates will be successful in acquiring scholarly positions after graduation.

**Biology –**

*B.S. Biology, Ecology and Evolutionary Biology, Life Science Certification*

1. Graduates will be able to explain the basic components of the cell theory of life including; the structure and function of prokaryotic and eukaryotic cells, the processes of mitosis and meiosis, the chromosomal theory of inheritance, and the major categories of biological molecules and their functional roles in living systems.
2. Graduates will be able to explain the theory of evolution and its role in the science of biology including; the mechanisms and effects of artificial, natural and sexual selection, and the major evidences that support an evolutionary history of life.
3. Graduates will be able to explain the basic physiological mechanisms that allow living organisms to carry on the fundamental necessities of life including homeostasis and negative feedback.
4. Graduates will be able to explain basic ecological interactions including; population growth and regulation, interactions between populations and their effects, mechanisms underlying community structure, and the cycling of energy and nutrients in ecological systems.
5. Graduates will be able to describe the diversity of life on earth including; major groups of living organisms, the characteristics of those groups, and the pattern of relatedness among groups of living organisms.

*B.S. Clinical Laboratory Science*

1. Students who complete the pre-requisites for internships in clinical laboratory science will have the skills and knowledge necessary for success in these internships.
2. Graduates will be able to explain the basic components of the cell theory of life including; the structure and function of prokaryotic and eukaryotic cells, the processes of mitosis and meiosis, the chromosomal theory of inheritance, and the major categories of biological molecules and their functional roles in living systems.
3. Graduates will be able to explain the theory of evolution and its role in the science of biology including; the mechanisms and effects of artificial, natural and sexual selection, and the major evidences that support an evolutionary history of life.
4. Graduates will be able to explain the basic physiological mechanisms that allow living organisms to carry on the fundamental necessities of life including homeostasis and negative feedback.

### *M.S. in Biology*

1. Graduates will be able to apply modern theories of cell and molecular biology to interpret research results or to design experiments to test hypotheses.
2. Graduates will be able to apply modern evolutionary theory to interpret research results or to design experiments to test hypotheses.
3. Graduates will be able to apply current models of ecological interaction to interpret research results or to design experiments to test hypotheses.
4. Graduates will be able to apply current models of physiological mechanisms to interpret research results or to design experiments to test hypotheses.
5. Graduates will be able to apply appropriate statistical analyses to interpret research results.

### **Chemistry/Biochemistry –**

1. Liberal Knowledge and Skills of Inquiry, Critical Thinking and Synthesis.
  - Students will be able to analyze complex problems and draw logical conclusions.
2. Core Skills – Students will be able to:
  - communicate scientific ideas and information effectively.
  - employ mathematics in the analysis of chemical problems.
  - understand and apply scientific reasoning in the chemical sciences.
  - use technological resources to access and communicate relevant information.
3. Specialized Knowledge – Students will be able to:
  - demonstrate technical and analytical skills in the areas of chemistry and biochemistry.
  - acquire research skills and specialized vocabulary for critical discourse.
4. Social Responsibility – Students will be able to:
  - apply chemical concepts to contemporary societal problems.
5. Cultural Identity – Students will be able to:
  - understand the international nature of chemical achievement and
  - understand the international nature of chemical problems and solutions. Departmental SLO's

### **Computer Science –**

1. Students will demonstrate proficiency in programming in a high level programming language.
2. Students will demonstrate in proficiency designing and programming applications by selecting and coding algorithms using appropriate data structures.
3. Students will demonstrate proficiency coding searching and sorting algorithms.
4. Students will demonstrate an understanding of algorithm analysis techniques.
5. Students will demonstrate proficiency in programming in assembly language.
6. Students will demonstrate an understanding of compiler technology.
7. Students will author a compiler for a high level programming language.
8. Students will demonstrate an understanding of modern operating systems including multi-processing and multi-tasking systems.

## **Mathematics –**

### *B.S. degree*

1. Students completing the baccalaureate program in mathematics will compare favorably in their mastery of mathematics with students completing similar programs nationwide.
2. Graduates of this program will be well prepared for their first position in the field.
3. Students completing this program will be successful in securing either professional employment or admission to graduate school.

### *Teacher's Certification*

1. Students completing the baccalaureate program with teacher certification in mathematics will compare favorably with students in similar programs statewide in their mastery of those areas of mathematics determined by the State to be essential to secondary mathematics education.
2. Graduates will be well prepared for their first position as a secondary school mathematics teacher.
3. Graduates of this program will be successful in securing employment in teaching or other professional fields, or admission to graduate school.

## **Physics –**

Students will agree or strongly with the following statements for individual courses:

1. This course increased my factual knowledge in science.
2. This course improved my reasoning and logical thinking.
3. This course improved my knowledge of laboratory methods.