

# **ASSESSMENT REPORT FOR**

Bachelor of Science with a major in Biology (BS)  
**Instructional Degree Program**

Spring 2004  
**Assessment Period Covered**

29 June 2004  
**Date Submitted**

## **Expanded Statement of Institutional Purpose Linkage:**

### **Institutional Mission Reference:**

Texas A&M International University, a Member of The Texas A&M University System, is committed to the preparation of students for leadership roles in their chosen profession and in an increasingly complex, culturally diverse state, national, and global society ... Through instruction, faculty and student research, and public service, Texas A&M International University is a strategic point of delivery for well-defined programs and services that improve the quality of life for citizens of the border region, the State of Texas, and national and international communities.

### **College/University Goal(s) Supported:**

To improve the biological science skills of students to prepare them for teaching, governmental employment or professional school.

### **Intended Educational (Student) Outcomes:**

1. Students will demonstrate an understanding of the "Mechanisms of Evolution" and apply principles of adaptation.
2. Students will show understanding of anaerobic and aerobic cellular respiration and demonstrate knowledge of the differences between eukaryotic and procaryotic cells.
3. Demonstrate basic comprehension of DNA structure, Mendelian genetics, cell structure and function, and enzymes.
4. Students will demonstrate the ability to plan and execute a research project then present the material in a logical manner.
5. Students will illustrate an overall gain in scientific knowledge in the areas of Ecology, Evolution and Diversity.

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## **Intended Educational (Student) Outcome:**

Students will demonstrate an understanding of the "Mechanisms of Evolution" and apply principles of adaptation.

## **First Means of Assessment for Outcome Identified Above:**

**1a. Means of Program Assessment & Criteria for Success:** Students will score an overall mean of 70% on embedded questions on the comprehensive final exam in BIOL 3406, Evolution, Fall Semester.

**1a. Summary of Assessment Data Collected:** Scores of embedded questions on the final exam: Adaptation- 67%; Mechanisms- 42%.

**1a. Use of Results to Improve Instructional Program:** Scores on "Adaptation" approach the goal. To improve learning in "Evolutionary Mechanisms" the instructor illustrates with more examples in class and assigns relevant out of class work to the students. The homework is reviewed by the instructor.

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## **Intended Educational (Student) Outcome:**

Students will show understanding of anaerobic and aerobic cellular respiration and demonstrate knowledge of the differences between eukaryotic and procaryotic cells.

## **First Means of Assessment for Outcome Identified Above:**

**2a. Means of Program Assessment & Criteria for Success:** Students will score an overall mean of 70% on embedded questions on the comprehensive final exam, BIOL 3412, Cell Biology, Fall Semester.

**2a. Summary of Assessment Data Collected:** The mean scores on cellular respiration- 84%, eukaryotic and procaryotic cells- 83%.

**2a. Use of Results to Improve Instructional Program:** This goal was met and no modifications are needed at this time.

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## **Intended Educational (Student) Outcome:**

Demonstrate basic comprehension of DNA structure, Mendelian genetics, cell structure and function, and enzymes.

## **First Means of Assessment for Outcome Identified Above:**

**3a. Means of Program Assessment & Criteria for Success:** Students will attain a mean overall score of 70% on embedded questions in the common, comprehensive final in multiple sections of BIOL 1406, General Biology I, Unifying Concepts, Fall semester.

**3a. Summary of Assessment Data Collected:** A total of 40 students took the same comprehensive final exam containing embedded questions. The scores for each section were:

DNA Structure	56.3
Mendelian Genetics	77.5
Cell Structure & Function	54.2
Enzymes	36.3
Mean	49.8

**3a. Use of Results to Improve Instructional Program:** This assessment method showed that there was difficulty in that instructor used a variety of testing methods and some student's score were affected by the type of test administered. Nonetheless, scores in 3 of the areas were low and the scores in "Enzymes" were very low. Models of cell and DNA structure are being used in the lab and lecture. A lab exercise was added on "Enzymes" and a computer enzyme simulation exercise was added.

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## **Intended Educational (Student) Outcome:**

Students will demonstrate the ability to plan and execute a research project then present the material in a logical manner.

## **First Means of Assessment for Outcome Identified Above:**

### **4a. Means of Program Assessment & Criteria for Success:**

Students will present to a combined group of their peers, the results of their research projects. The projects will be evaluated by a jury of at least 3 departmental faculty each semester utilizing a rubric designed by the department. Student scores will average 70%.

**4a. Summary of Assessment Data Collected:** Twenty-seven research projects were presented. The overall mean was 72%.

**4a. Use of Results to Improve Instructional Program:** The overall mean was acceptable, however, results will be used by instructors in all courses to improve understanding of the scientific method and the use of scientific language.

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## **Intended Educational (Student) Outcome:**

Students will illustrate an overall gain in scientific knowledge in Ecology, Evolution and Diversity.

## **First Means of Assessment for Outcome Identified Above:**

**5a. Means of Program Assessment & Criteria for Success:** Students will show increased knowledge by scoring 80% on a comprehensive exam administered in BIOL 4170, Biology Seminar, Spring Semester.

**5a. Summary of Assessment Data Collected:** Students attained a mean score of 54%.

**5a. Use of Results to Improve Instructional Program:** This method of assessment did not work well. The expectations were too high. The test was not well thought out and was generated by one person, instead of the entire faculty. We also failed to impress the students with the need, importance and value of this assessment device. The test has been redone and students next Spring semester will be convinced of its value to them and the department.

## SUPPORT DOCUMENTATION

SOURCE	LOCATION/Special Instructions