Mission/Purpose
To provide opportunities for students to pursue a quality education in the fields of biological and environmental sciences and assist in developing the important qualities of independent thinking, respect for the ideas of others, personal integrity and character in order to realize their quests for a philosophy of life and self-fulfillment.

I. Goals and Student Learning Outcomes, With Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

A. Goal: To provide opportunities for students to pursue a quality education in the fields of Biological and Environmental Sciences
The goal of this department is to provide opportunities for students to pursue a quality education in the fields of biological and environmental sciences.

1. Outcome: Students will have a working knowledge of the scientific method
Students will demonstrate a working knowledge of the scientific method.

   a. Measure: Students will demonstrate knowledge in all areas of the scientific method
   Students will demonstrate working knowledge in all areas of the scientific method. Students will demonstrate skills in the development of a hypothesis, designing experiments to test the hypothesis, and reaching conclusions based on presentations of scientific articles. Skills will be evidenced by the student’s ability to present the data in a systematic way, explain experimental rationale, and answer questions posed by the audience in BY 308, Seminar in Biology. The plan is to incorporate this element of the course during the Spring of 2011. This class is taken by Biology majors.

   Source of Evidence: Presentation, either individual or group

   1. Achievement Target:
   90% of the majors in the Department of Biological and Environmental Sciences will demonstrate an understanding of the concepts of the scientific method during the student’s presentation of a scientific article. The finding will be based on the instructor’s assessment of the student’s ability to demonstrate an understanding of this concept.

   2. Findings (2010-2011) – Achievement Target: Partially Met
   During Spring 2010, based on their oral presentations, 75% of the students demonstrated an understanding of the concepts of the scientific method.

   3. Action Plan:
   Increase the opportunities for undergraduate research
   In order to increase the number of students who present at scientific conference, the department needs to increase the number of research projects that are underway at the University of West Alabama. Funding will be necessary to cover travel expenses, lodging expenses, the cost of poster publication, etc.
Established in Cycle: 2010-2011
Implementation Status: In Progress
Priority: High
Implementation Description: Presently, the curriculum for the Department of Biological and Environmental Sciences has been streamlined to allow faculty members time to involve more undergraduate students in research projects.
Responsible Person/Group: Dean, Chair and Biology Faculty
Additional Resources Requested: Research Equipment and facilities
Budget Amount Requested: $5,000.00

2. Outcome: Students will demonstrate an understanding of the process of natural selection.
Students will be able to demonstrate an understanding of natural selection and how this process addresses the diversity of life on earth.

   a. Measure: Majors will demonstrate an understanding of the process of natural selection on exams in BY490 (Evolutionary Theory).
   Majors will demonstrate an understanding of the process of natural selection. This objective will be assessed by the student’s ability to answer specific questions related to natural selection on tests in "Evolutionary Theory" (BY 490).

   Source of Evidence: Academic direct measure of learning - other

1. Achievement Target:
Students in BY 490, Evolutionary Theory, will be able to adequately (60% proficiency level) answer a question related to evolution and natural selection.

2. Findings (2010-2011) - Achievement Target: Met
Students were given the following question: "What four conditions are necessary for natural selection to operate?" 80% of the student were able to answer this question effectively (60% proficiency).

3. Outcome: Students will be able to demonstrate an understanding of biological organization.
Students will be able to demonstrate an understanding of biological organization, starting from atoms and continuing through to the ecosystem.

   a. Measure: Understanding of biological organization will be demonstrated through comprehensive final examinations.
   The extent to which students are able to successfully demonstrate an understanding of biological organization will be measured by analyzing overall final exam scores in BY 450, Ecology. Final exams in BY 450 are comprehensive and measure student learning throughout the course.

   Source of Evidence: Academic direct measure of learning - other

1. Achievement Target:
Students will achieve a 75% or better overall score on the comprehensive evaluation.

2. Findings (2010-2011) - Achievement Target: Partially Met
Students were asked the following question related to biological organization: “Describe how competition acts as an agent of directional selection in population. Include a description of interference competition, as well as both intraspecific and
interspecific competition in your answer.” Based on the test results, 33% of the students demonstrated an understanding of this concept.

3. **Action Plan:**

   **Expand student exposure to the concept of biological organization.**

   To improve upon the students' understanding of this key concept, students will given extra assignments with the goal of reinforcing their knowledge as it relates to biological organization. Additionally, students will be given questions related to this concept throughout the course in an effort to track the students' progress in mastering this concept. Individual course syllabi have been modified to address these measures.

   - **Established in Cycle:** 2010-2011
   - **Implementation Status:** In Progress
   - **Priority:** High
   - **Implementation Description:** Reinforcement
   - **Responsible Person/Group:** Chair & BY 450 Instructor
   - **Additional Resources Requested:** None
   - **Budget Amount Requested:** $0.00

II. **Goals and Other Outcomes/Objectives, With Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans**

   A. **Goal:** To provide opportunities for students to pursue a quality education in the fields of Biological and Environmental Sciences

      The goal of this department is to provide opportunities for students to pursue a quality education in the fields of biological and environmental sciences.

      1. **Objective:** Increase faculty and student involvement in research

         Increase faculty and student involvement in research opportunities.

         a. **Measure:** Investigate methods to provide more opportunities for research involvement

            By having discussions with faculty and students, the Department of Biology and Environmental Sciences will investigate ways to provide more undergraduate research opportunities for students and faculty.

            Source of Evidence: Discussions

            1. **Achievement Target:**

               The Chair of the Department of Biology and Environmental Sciences will implement any reasonable strategies identified to increase opportunities for faculty and students to become more involved in undergraduate research.

            2. **Findings (2010-2011) - Achievement Target: Met**

               As a result of discussions with faculty and students, the Department of Biological and Environmental Sciences decided to streamline the Biological and Environmental Sciences curriculum. Streamlining the curriculum resulted in eliminating some classes and sections of classes that were not well attended and that divided faculty time. The streamlining proposal was accepted by the University Academic Council and will begin Fall 2011.
III. Other Plans for Improvement

A. Establish assessment plan
   The Department Chair and the Dean will need to work together to craft an assessment plan
   that will result in improved accountability in the department.
   **Established in Cycle:** 2009-2010
   **Implementation Status:** In Progress
   **Priority:** High
   **Implementation Description:** Since its initiation, the department has been continually
   engaged in planning and assessment.
   **Responsible Person/Group:** Chair

B. Purchase HD Microscopy for General Biology Labs
   Purchase 1 High-Definition Video Microscopy Unit for the General Biology Labs. This
   unit will greatly facilitate the department’s ability to demonstrate the proper use of the
   microscope to its general biology students.
   **Established in Cycle:** 2010-2011
   **Implementation Status:** Planned
   **Priority:** High
   **Implementation Description:** Incorporate the cost of this unit into the budget for 2011.
   **Responsible Person/Group:** Chair and Dean
   **Budget Amount Requested:** $4,500.00

C. Purchase HD Microscopy for the Microbiology/Cell Biology Labs
   Purchase a High-Definition Video Microscopy System for the Microbiology/Cell Biology
   Labs. Currently, it is difficult to show the class as a whole how to find specimens using the
   microscope. For this reason, it is necessary that faculty employ some sort of video
   microscopy display system.
   **Established in Cycle:** 2010-2011
   **Implementation Status:** Finished
   **Priority:** High
   **Implementation Description:** During the Summer of 2011, the department purchased a
   high-definition video microscopy system for this lab. The resolution of this system is very
   good.
   **Responsible Person/Group:** Chair and Dean

D. Purchase human slides
   Obtain $5,000 to purchase 5 complete sets of human slides.
   **Established in Cycle:** 2010-2011
   **Implementation Status:** Planned
   **Priority:** High
   **Implementation Description:** Once funding becomes available, these purchases will be
   made.
   **Responsible Person/Group:** Dr. Janis Beaird and Dr. Jeffery Merida
   **Budget Amount Requested:** $5,000.00

E. Purchase microscopes for the Freshmen Biology Lab
   Purchase microscopes for the Freshman Biology Lab. The department needs 36
   microscopes for the Biology 101 lab. There are currently 32 stations in this laboratory. As
   microscopes sometimes needs servicing, the extra microscopes would be used for this
   eventuality.
   **Established in Cycle:** 2010-2011
   **Implementation Status:** In Progress
   **Priority:** High
   **Implementation Description:** During the Spring of 2011, the department purchased 24
   microscopes for the Biology 101 labs.
Responsible Person/Group: Chair and Dean
Additional Resources Requested: 8 microscopes for this lab.
Budget Amount Requested: $8,000.00

F. Purchase Sediment Trap
During field studies in Geology, students collect a large array of samples. It is necessary that the department have a means of cleaning these samples for examination. A sink and a sediment trap are needed.
Established in Cycle: 2010-2011
Implementation Status: Finished
Priority: High
Implementation Description: The sink and the sediment trap were purchased and are now operational.
Responsible Person/Group: Chair and Dean
Budget Amount Requested: $900.00

G. Purchase storage building for Environmental Science equipment.
There is not adequate space in Bibb Graves for storing the field equipment for the various field courses offered by the department. Consequently, a storage building is needed for such a use.
Established in Cycle: 2010-2011
Implementation Status: In Progress
Priority: High
Implementation Description: A 12’x12’ storage building was purchased and placed it on the grounds of the AOWTC (ALFA Hall) and is supplied electricity for refrigeration units for cold storage.
Responsible Person/Group: Chair, Dean & Director of AOWTC
Additional Resources Requested: Refrigerator and freezer units
Budget Amount Requested: $2,000.00

IV. Analysis Answers
A. What specific strengths did your assessments show? (Strengths)
The assessments related to student learning outcomes have given the Department of Biological and Environmental Sciences focus as to the direction the faculty want to take in terms helping students to achieve. Additionally, the assessments have helped the faculty to make data-driven decisions.

B. What specific weaknesses or challenges did your assessments show? (Weaknesses)
Some of the assessments, especially those related to student data after graduation, are difficult to attain. The department must devise a way to influence students to update the department on their progress after graduation.

C. What plans were implemented?
The following plans were implemented: (1) purchased microscopes for the Freshman Biology Lab and (2) purchased a storage building for Environmental Science equipment.

D. What plans were not implemented?
The cost for this item has been proposed for the upcoming school year (2011), and this purchase will be made upon receipt of funds.

E. How will assessment results be used for continuous improvement?
In general, the assessments will show faculty our areas of weakness and those areas that need improvement. The assessments have given faculty a strategy for putting plans in place that will allow them to make data-driven decisions.