Department of Biological and Environmental Sciences

Detailed Assessment Report
2011-2012

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/Objectives, with Related Measures, Targets, Findings, and Action Plans

A. Goal: Address the major educational issues of the region
Address the major educational, social, cultural, and economic issues of the region and in doing so promote a positive self-image of the institution and the area.

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, conducting experiments to test the hypothesis, and reaching conclusions based on tests. Skills will be evidenced by comprehensive final examination scores in BY 308, Seminar in Biology.

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 students' presentation of a scientific article. The finding will be based on the instructor's assessment of the student's ability to demonstration and understanding of this concept.

2. Findings (2011-2012) - Target: Not Met
100% of students in BY308 were able to discuss the concept of the Scientific Method in student presentations (seminars) as reflected in grades.

3. Action Plans:
   a. Increases the opportunities for undergraduate research
      In order to increase undergraduate research experience and exposure to the scientific conference, there must be an increase in the number of research projects that are underway at the University of West Alabama.
      Established in Cycle: 2010-2011
      Implementation Status: In-Progress
Priority: High
Implementation Description: Increase the number of undergraduate research projects
Responsible Person/Group: Dean, Chair and Biology Faculty
Additional Resources Requested: Research Equipment and facilities
Budget Amount Requested: $50,000.00 (recurring)

b. Students in the department will have a departmental GPA of 2.5 or better
Department of Biological and Environmental Sciences will help our Biology majors to achieve a GPA of 2.5 or better.
Established in Cycle: 2011-2012
Implementation Status: Planned
Priority: High
Implementation Description: GPA in major
Responsible Person/Group: Biology Faculty

2. Outcome: Students will demonstrate an understanding of the process of evolution.
Students will be able to demonstrate an understanding of evolution, 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 students' ability to answer specific questions related to natural selection on tests in "Evolutionary Theory" (BY490).

1. Achievement Target:
Students in BY 490 (Evolutionary Theory) will be able to adequately (70% proficiency level) answer a question related to evolution and natural selection.

2. Findings (2011-2012) - Target: Met
Students in BY490 (Evolution Theory) were able to answer questions about evolution adequately.

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 exam questions related to this topic from one or more selected courses.
1. **Achievement Target:**
   Students will achieve a 75% or better overall score on the comprehensive evaluation.

2. **Findings (2011-2012) - Target: Not Met**
   75% of the students were not proficient in their understanding of the concept of biological organization.

3. **Action Plans:**
   a. **Expand student exposure to the concept of biological organization.**
      To improved upon the students' understanding of this key concept, students will be 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.
      
      **Established in Cycle:** 2010-2011
      **Implementation Status:** In-Progress
      **Priority:** High
      **Implementation Description:** Reinforcement
      **Responsible Person/Group:** Chair & BY450 Instructor
      **Additional Resources Requested:** None
      **Budget Amount Requested:** $0.00 (no request)

   b. **Create video recording of lectures to help student with difficult concepts**
      To help students with their understanding of the material, video recordings of the lecture will be created. This will allow students to review material that is difficult to understand.
      
      **Established in Cycle:** 2011-2012
      **Implementation Status:** Planned
      **Priority:** High
      **Implementation Description:** Video Lectures
      **Responsible Person/Group:** Biology Faculty
      **Additional Resources Requested:** Captivate Video Software
      **Budget Amount Requested:** $3,000.00 (recurring)

   a. **Place greater emphasis on classroom student advising**
      By emphasizing more one-on-one advising, we will help the Biology students with these concepts of Biology.
      
      **Established in Cycle:** 2011-2012
      **Implementation Status:** In-Progress
      **Priority:** High
      **Implementation Description:** Greater Advising
      **Responsible Person/Group:** Biology Faculty

II. **Other Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans**
   
   A. **Goal: Address the major educational issues of the region**
Address the major educational, social, cultural, and economic issues of the region and in doing so promote a positive self-image of the institution and the area.

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 research opportunities for students and faculty.

   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 research.

   2. **Findings (2011-2012) - Target: Met**
      During the previous school year, undergraduate students in the Department of Biological and Environmental Sciences were afforded the opportunity to present their research data at conferences in Tuskegee, Alabama, Athens, Georgia, and Livingston, Alabama.

III. **Other Plans for Improvement**

   A. **Purchase HD Microscopy for General Biology Labs**
      Purchase 1 HD Microscopy for General Biology Labs
      **Established in Cycle**: 2010-2011
      **Implementation Status**: Finished
      **Priority**: High
      **Responsible Person/Group**: Chair and Dean
      **Budget Amount Requested**: $4,500.00 (recurring)

   B. **Purchase HD Microscopy for the Microbiology/Cell Biology Labs**
      The Department of Biology and Environmental Sciences would like to 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 we employ some sort of video microscopy display system.
      **Established in Cycle**: 2010-2011
      **Implementation Status**: Finished
      **Priority**: High
      **Implementation Description**: During the early Spring of 2011, the Department of Biology and Environmental Sciences purchased an inexpensive low-definition video camera to display microscopic images on the projection screen. The resolution on the projection screen was poor, and it was concluded that this system of inadequate for this purpose. 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 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 need servicing, the extra microscopes would be used for this eventuality. Additionally, there will be a need to purchase storage cabinets in which to place the microscopes.
Established in Cycle: 2010-2011
Implementation Status: In-Progress
Priority: High
Implementation Description: During the Spring of 2011, the department purchased 24 microscopes and 3 microscope storage cabinets for the Biology 101 labs.
Responsible Person/Group: Chair and Dean
Additional Resources Requested: Still in need of 12 microscopes for this lab.
Budget Amount Requested: $8,000.00 (recurring)

E. Purchase Sediment Trap
During field studies in Geology, students collect a large array of samples. It is necessary that we have a means of cleaning these samples for examination. For such a purpose, there is a need for a sink and a sediment trap.
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 (recurring)

F. Purchase storage building for Environmental Science equipment.
There is not adequate space in Bibb Graves for store the field equipment for the various field courses offered by the department. Consequently, it is necessary to purchase a storage building for such a use.
Established in Cycle: 2010-2011
Implementation Status: In-Progress
Priority: High
Implementation Description: The department has purchased a 12'x12' storage building and placed it on the grounds of the AOWTC (ALFA Hall). Additionally, the department has supplied electricity to the building so that there can also be 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 (recurring)

G. Build lab benches, table, and cabinets for Environmental Sciences Lab
The Physical Plant will build 3 lab benches, one table, and 2 cabinets for the Environmental Sciences Lab
Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High
**Implementation Description:** Work with the Bobbie Truelove and the Physical Plant to have equipment for the lab built. The Department of Biology and Environmental Sciences has identified laboratory benches from other locations to use in this facility temporarily. Undergraduate research students are currently using the facility to conduct research. The current facilities, however, are not adequate for the students' needs.

**Responsible Person/Group:** Chair and Bobby Truelove  
**Budget Amount Requested:** $10,000.00 (recurring)

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**H. Hire a lab manager for the A&P labs**

- Hire a lab manager for the A&P labs  
- **Established in Cycle:** 2011-2012  
- **Implementation Status:** Planned  
- **Priority:** High  
- **Implementation Description:** Hire a lab manager for the A&P labs  
- **Responsible Person/Group:** Chair & Dean  
- **Budget Amount Requested:** $40,000.00 (recurring)

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**I. Purchase additional microscopes for the Microbiology/Cell Biology Labs**

- Currently, there are 12 microscopes for use in these labs. This number has been adequate in the past. However, due to increasing numbers of students in Cell Biology, Immunology, Hematology, Genetics, Microbiology, etc., it is necessary to purchase additional microscopes. There are 24 student stations in this lab, but only 12 microscopes.  
- **Established in Cycle:** 2011-2012  
- **Implementation Status:** In-Progress  
- **Priority:** High  
- **Responsible Person/Group:** Chair and Dean  
- **Additional Resources Requested:** 12 microscopes  
- **Budget Amount Requested:** $24,000.00 (recurring)

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**J. Purchase Equipment for Environmental Sciences Research Lab**

- In an effort to become more involved in undergraduate research, there is a need to purchase equipment (spectrophotometer, pH meter, balances, etc) for the Environmental Research Lab adjacent to BG202.  
- **Established in Cycle:** 2011-2012  
- **Implementation Status:** In-Progress  
- **Priority:** High  
- **Responsible Person/Group:** Chair & Dean  
- **Additional Resources Requested:** Basic Laboratory equipment (spectrophotometer, balances, pH meters, refrigeration units, etc)  
- **Budget Amount Requested:** $20,000.00 (recurring)

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**K. Purchase Lane Storage Cabinets for Geological samples**

- In the Geology and Paleontology labs, the department has an abundance of samples that need to be preserved. The department needs to purchase Lane cabinets to house these samples.  
- **Established in Cycle:** 2011-2012  
- **Implementation Status:** Finished  
- **Priority:** High
Implementation Description: In addition to the 5 storage cabinets that the department currently has, we were able to purchase 4 additional cabinets.

Responsible Person/Group: Chair, Dean, Provost, President

Additional Resources Requested: Additional Lane Cabinets

Budget Amount Requested: $4,000.00 (recurring)

L. Purchase new chairs for General Biology Labs
   Purchase new chairs for General Biology Labs.
   Established in Cycle: 2011-2012
   Implementation Status: Finished
   Priority: High
   Responsible Person/Group: Chair and Dean
   Additional Resources Requested: 32 chairs and one instructor stool
   Budget Amount Requested: $5,106.00 (recurring)

M. Purchase new chairs for the Anatomy & Physiology Labs
   Currently, in the Anatomy and Physiology labs, there are out-dated wooded chairs. Better chairs are needed in this lab.
   Established in Cycle: 2011-2012
   Implementation Status: Finished
   Priority: High
   Implementation Description: The Department of Biology and Environmental Sciences have purchased 24 new chairs for the Anatomy labs.
   Responsible Person/Group: Chair and Dean

N. Purchase new iPads for all faculty members in the Department of Biological and Environmental Sciences
   Purchase new iPads for all faculty members in the Department of Biological and Environmental Sciences There is a great deal of technology oriented towards helping students understand Biology. There are many apps that instructors can use to help students. However, the instructors themselves need the tools to be able to assist the students.
   Established in Cycle: 2011-2012
   Implementation Status: Planned
   Priority: Medium
   Implementation Description: Biology iPads for instructors
   Responsible Person/Group: Chair
   Additional Resources Requested: Purchase Apps
   Budget Amount Requested: $10,000.00 (recurring)

O. Purchase new microscopes for Botany Lab
   The microscopes currently in the Botany lab need to be updated. The department needs to purchase 32 microscopes for this lab.
   Established in Cycle: 2011-2012
   Implementation Status: Planned
   Priority: High
   Responsible Person/Group: Chair and Dean
   Additional Resources Requested: 32 microscopes
   Budget Amount Requested: $20,000.00 (recurring)
P. Purchase sympodiums for lecture rooms
Purchase sympodiums for BG 102, 204, and 111. An estimated cost per unit is $2,000, for a total of $6,000.
Established in Cycle: 2011-2012
Implementation Status: Planned
Priority: High
Responsible Person/Group: Chair, Dean, and Information Systems
Additional Resources Requested: After purchase, Information Systems will install equipment
Budget Amount Requested: $6,000.00 (recurring)

Q. Upgrade the BG110 Computer Lab
The BG110 Computer lab is used heavily by both the Math department and the Biology Department. There are 24 stations in the lab. Most classes have more than 24 students. Additionally, by placing the monitors on the tops of the desk, this limits the use of the room as a general lecture room. The facility would be better served if the monitors could be recessed into the desks. Thirty two (32) such stations would be ideal. Further, the lab needs a new automated projection screen. The carpet currently in this lab is dingy, tattered and frayed.
Established in Cycle: 2011-2012
Implementation Status: Planned
Priority: High
Responsible Person/Group: Chair and Dean
Additional Resources Requested: 32 computer desks that can house recessed monitors 8 additional computers Powered projection screen New Carpet 8 Chairs
Budget Amount Requested: $30,000.00 (recurring)

IV. Analysis Questions and Analysis Answers

A. What specific strengths did your assessments show? (Strengths)
The assessments related to student learning outcomes has given the Department of Biological and Environmental Sciences focus to the direction we want to take in terms helping student to achieve. Additionally, the assessments have helped us to make data-driven decisions. Our curriculum is constantly being tailored to meet the needs of our students.

B. What specific weaknesses or challenges did your assessments show? (Weaknesses)
There are specific themes of Biology. These themes are pivotal to one's understanding of the subject. An emphasis on student understanding in these basic areas has begun. However, the level of student understanding has not risen proportionately. There may be a need to seek other avenues to ensure that students grasp these concepts.

C. What plans were implemented?
Implementation has begun of the following plans: 1) Expanding student exposure to the concept of biological organization 2) Create video recordings of lectures to help students with difficult concepts

D. What plans were not implemented?
Plans that have not been implemented include the following: (1) feature alumni on web page, (2) feature at least one graduate in each Scimatics issue and (2) host alumni speakers.

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

V. Annual Report Section Responses

A. Public/Community Service
The Department of Biological and Environmental Sciences was involved in several outreach activities: 1) Science Olympiad 2) Science Fair 3) Science Saturdays 4) WISE-GEMS Additionally, the Department was instrumental in obtaining the Bloom Grant and the Project Engage grant. Funding from the Bloom grant was used to mentor high school students and to conduct a summer laboratory techniques workshop for these high school students.
### ANNUAL PLAN

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<tr>
<td><strong>Goals</strong>&lt;br&gt;Goals are broad statements describing what the unit wants to accomplish. Goals relate to both the unit's mission and the University's mission. The goal(s) is stated as the University goal(s) a unit is attempting to meet.</td>
<td>YES</td>
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<td><strong>Outcomes/Objectives</strong>&lt;br&gt;Outcomes and objectives are statements that describe in some detail what the unit plans to accomplish. Outcomes/objectives are associated with all applicable goals, strategic plans, standards, and institutional priorities.</td>
<td>YES</td>
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<td>Objectives are active-verb descriptions of specific points or tasks the unit will accomplish or reach. Outcomes are active-verb descriptions of a desired end result related to student learning and the unit's mission.</td>
<td>YES</td>
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<td><strong>Measures</strong>&lt;br&gt;Measures are statements to judge success in achieving the stated outcome or objective. Measures contain information on the type of evidence and assessment tool that a unit will use to verify if stated outcome/objective has been met.</td>
<td>YES</td>
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<td><strong>Achievement Targets</strong>&lt;br&gt;Achievement targets are the thresholds that the measures must meet for the unit to determine that it has been successful in meeting its specified outcomes/objectives. Achievement targets are measurable statements.</td>
<td>YES</td>
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**Planning and Assessment Approval**

Department or Division: Dept of Biological + Env. Sercies<br>Chair or Director: Dr. Mardia<br>Dean or Vice President: Dr. Sharma

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<tr>
<td><strong>Findings</strong></td>
<td>YES</td>
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<td>Findings are indications whether an outcome/objective was met or not. Findings are put into the system under each achievement target. Findings include an interpretation of results, possible uses of results, reflection on problems encountered, indicated improvements/changes and strengths or weakness.</td>
<td>NO</td>
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<td><strong>Action Plans</strong></td>
<td>YES</td>
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<td>Action plans are detailed plans created by the unit to meet an outcome/objective that was only partially met or not met or to make improvement to those outcomes/objectives that were met but still need some strengthening. The plan includes a projected completion date, implementation description, responsible person(s)/group, resources required, and budget amount (if applicable).</td>
<td>NO</td>
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<td>Action plans created in previous cycles have been updated with implementation notes.</td>
<td>YES</td>
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<td><strong>Annual Report</strong></td>
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<td>The Annual Report section contains information on key achievements, faculty and/or staff achievements, and community/public.</td>
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<td><strong>Analysis Report</strong></td>
<td>YES</td>
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<td>The unit has reflected on and created narratives for each of the following areas: specific strengths and progress made on outcomes/objectives, specific weaknesses or challenges, plans that were and were not implemented, and how assessment results will be used for continuous improvement.</td>
<td>NO</td>
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Approved by: ___________________________  Date: 8/1/12
Signature of Dean or Vice President

Received by OIE: _________________________  Date: 8/9/12
Signature of Coordinator of Planning and Assessment