Annual Goals for Physics & Earth Science

2010-2011

Title:	To secure funds to support an Endowed Scholarship Fund
Description:	The department established a goal, continued from the previous year, to establish an endowed scholarship fund that will be accessible to physics majors and minors and geology minors.
Budget:	$1,000.00
University Goals:	1,2,3
Strategic Goals:	
Responsibility:	Chair
Participation:	Dept. Faculty
Results:	Another meeting which followed the preliminary meeting with the Foundation moved the department faculty along a bit. Some information from the Foundation concerning contact information concerning former UNA majors and minors.
Actions:	It is evident that we will spend time locating potential donors. The department chair and administrative assistant will begin by attempting to locate more former graduates, but place energy on developing communication lines with graduating students so that an ongoing 'discussion' continues for many reasons. One--just to know how they are and what is happening. Two--contact for purposes as resources and to assist us in growing the Department.
Improvements:	While not as much was accomplished as hoped. This effort is important to departmental members in order to obtain money for scholarships and money for seats in the planetarium.

Title:	To secure improved, appropriate seating for the planetarium
Description:	The department wishes to secure improved seating in the planetarium to make its use more comfortable and inviting to students and community members who use the planetarium. Securing the seats by offering them to the public for purchase including a donation toward scholarships allows an integration of two departmental goals.

Budget:	$1,000.00
University Goals:	1,2,3,4,5
Strategic Goals:	
Responsibility:	Chair
Participation:	Depart. Faculty
Results:	Some small amount of monies has been donated for the purpose of seats ad scholarship funds.
Actions:	Little action was taken for this project, but it remains a high priority.
Improvements:	In the fall, there needs to be a flurry of action beginning with creating an Open House and invite guests who are potential donors to the programs. A Calendar August_ print fliers/ handouts. Etc. August Meet w/ foundation to Plan October Open House September--Plan Winter Holiday Events to attract a different group of potential donors.

Title:	To enhance the Department's efforts in community outreach
Description:	This goal is established on two levels. One is to feature the departmental offerings to regional middle school and high school students as a recruiting mechanism. Two, the new Scanning Electron Microscope provides a unique foundation for providing services to certain businesses or corporation in the area. The department will begin to establish this link through promotional contacts.
Budget:	$500.00
University Goals:	1,2,3,4,5
Strategic Goals:	
Responsibility:	Chair
Participation:	Dept. Faculty
Results:	Outreach Activities included Three faculty members teaching young students--fossils, geology, and astronomy on campus and in classrooms. (10 events) Ms. Driskell, Dr. Puckett, Dr. Blake, and Dr. Webb One faculty member presented a Great "Gems within Gems" program that had good attendance from the campus and local community. Dr. Brian Thompson's presentation bridged the areas of this department using beautiful and magnificent gems,

	science, and discovery. Twenty-eight people attend the program. Dr. Statom continued working on the mineral collection housed in the Library--preparing data cards for the specimens. The collection is a gift from Mr. Jophn den Boor.
Actions:	
Improvements:	Dr. Statom will complete the project collaboratively with Mr. den Boor. Then the department will host a PR session to promote viewing of the collection and to create an opportunity to thank Mr. den Boor. Faculty will promote in Earth Science Week in October and connect activities for young learners to the event.

Student Learning Outcomes for Physics & Earth Science

2010-2011

Title:	Physics Major Research Skill Development
Description:	Students will be engaged in investigations of mechanics, electricity, magnetism, heat, sound, oprics, and modern physics.
Budget:	$300.00
Core Competencies:	1,2,4,5
25% Online:	
50% Online:	
Core Competencies:	1,2,4,5
How Often:	Every 2 years
Assessed this Year?	Yes
Responsibility:	Faculty/Physics
Participation:	
Direct	

Assessments

Students' Writing

Indirect Assessments

Results: Writing up research experiments is a critical piece of research literacy (QEP). At this point in time, students generally are "at the beginning" of the process leading to successful scientific writing. First experiment/Expository Writing: a) one pair of students illustrated competency in writing about the physics concepts and b) one pair of students demonstrated competency in in understanding physics concepts as communicated through writing In the end, three out of four continued to struggle, but they demonstrated lower level competency than the fourth student. There were several drafts of communicating research experiences and reviews of the physics concepts related to the experiment.

Curriculum: There will not be changes to the structure of the course presentation. Students demonstrated a level of competency for the skills expected.

Actions: In reflection, during the formative ad summative assessment stages the faculty member considered whether the students should have been rotated The intro different pairings for each experiment. Due to the pairs being balanced in motivation and work load, and the members of each pair were similar in dispositions, the groups were left intact throughout the semester.

Improvements:

Title: Research

Description: Students will be able to engage in research, collect and interpret data, and communicate outcomes.

Budget: $0.00

Core Competencies: 1,2,3,4,5

25% Online:

50% Online:

Core Competencies: 1,2,3,4,5

How Often: Every year

Assessed this Year? Yes

Responsibility: Faculty/Physics

Participation:

Direct Assessments

CSEM

Faculty Created

Indirect Assessments

Results: The results of eight exams --the final being a standardized Concept Survey in Electricity and Magnetism (CSEM) indicated that the learning outcomes of the early portion of the semester were more challenging to achieve. The overall performance was a acceptable level of meeting learning outcomes collectively.

Curriculum: The faculty member is considering limiting the topics on the concepts covered in the first two tests. Students met expectations of concepts at 58%--a score that is consider good by physics educators.

Actions:

Improvements:

Title: Physics-Major Selected Topics

Description: Students will demonstrate comprehension of electric fields, electric potential, magnetic fields, and electromagnetic fields through problem-solving

	applications.
Budget:	$0.00
Core Competencies:	2,4
25% Online:	
50% Online:	
Core Competencies:	2,4
How Often:	Every year
Assessed this Year?	Yes
Responsibility:	
Participation:	
Direct Assessments	
Indirect Assessments	
Results:	Over the last two years, three physics majors have spent at least two semesters working on optics research: Emre Guler, David Keating, and David MacMillan. Also, two majors have worked on atomic research: Takehiro Akiyama and David Keating.During this time, four majors have worked in astronomy research: Terry Tidwell, Takehiro Akiyama, Kento Hatanaka, and Daniel Johnson. As can be seen in these lists, a couple students have worked in more than one research area. Along with guiding our majors in research, the faculty seeks opportunities for them to present their research. As a result, our majors have acquired recognition for their research. David MacMillan won the UNA Phi Kappa Phi Award for Single Author Research Paper (maybe this isn't the exact title?) in Spring 2011. At the state level, David Keating won the "Physics Section Best Student Paper" award at the 2010

	meeting of the Alabama Academy of Science (AAS). Daniel Johnson and David MacMillan shared the "Physics Section Best Student Paper" at the 2011 meeting of the AAS. Previously, we have had students win "Best Student Presentation" awards at American Physical Society (APS) meetings.
Curriculum:	No changes are planned.
Actions:	
Improvements:	

Title:	Physics Major Conservative Forces
Description:	Students will be able to understand and apply the unifying principle of Conservative Forces (Potential Energy, Conservation of Energy)
Budget:	$0.00
Core Competencies:	2,4
25% Online:	
50% Online:	
Core Competencies:	2,4
How Often:	Every 2 years
Assessed this Year?	Yes
Responsibility:	Faculty/Physics
Participation:	
Direct Assessments	
	faculty developed--not pre-formative-post
Indirect Assessments	

Results:	Item # 1. PH 447. Two types of assessments included five in class and five out-of class exams. The average range of in class scores: 73% to 90%; the average range for out of class exams was 61% to 90%. Student achievement of learning outcomes was inconsistent/and random. Learning out comes were analyzed collectively. These scores are performance of physics majors--PH 447 Electricity and Magnetism. Item 2.PH 121 Learning objectives are carefully assessed in this course. The method used is a pre, mid-point or formative assessment, and the last is a post test. In this test specific content questions were developed to assess particular learning objectives throughout the time period of study. Providing this content, Question # 8 allows an assessment of the concept at points through the learning period.
Curriculum:	None
Actions:	None are planned.
Improvements:	

Title:	General Science Major w/ Second Major in Education
Description:	Students will demonstrate the ability to teach inquiry-based lessons reflecting science education reform.
Budget:	$0.00
Core Competencies:	1,2,4,5
25% Online:	
50% Online:	
Core Competencies:	1,2,4,5
How Often:	Every year
Assessed this Year?	Yes
Responsibility:	Faculty/Methods
Participation:	
Direct Assessments	
	Faculty made

Indirect Assessments

Results: A teaching guide and rubric is given to teaching candidates. Several lessons are modeled based on inquiry based lesson plans developed by the faculty. Ninety percent demonstrated a clear understanding of how to develop and deliver an inquiry-based science lesson appropriate to his/her discipline. Forty percent demonstrated teaching using convergent questions and poor questioning. One hundred percent knew the science content taught and additional relative information. Eighty percent demonstrated the need to build on prior knowledge and experiences. A copy of the rubric is attached.

Curriculum: Continue to emphasize the development of divergent questions; provide more practice writing and asking questions in the classroom setting; Have students write a case study where teacher use prior knowledge and a case where they do not. Students will write about the anticipated learning outcomes.

Actions:

Improvements: