

Administrative and Educational Support Report*

Department of Physics & Geology

**Annual Action Plan
Annual Assessment Report**

June 2005 – May 2006

*Student Learning Outcomes for this department are available at
<http://ie.panam.edu/CoSELearningOutcomes.htm>



Annual Action Plan: June 1, 2005–May 31, 2006

Unit: Department of Physics and Geology

UTPA Mission: The University of Texas-Pan American (UTPA) serves the higher education needs of a rapidly growing, international, multicultural population in the South Texas Region. The University preserves, transmits and creates knowledge to serve the cultural, civic, and economic advancement of the region and the state. The University provides students advanced instruction in academic programs offered through innovative delivery systems that lead to professional certification, and baccalaureate, master’s and doctoral degrees. Through teaching, research, creative activity and public service, UTPA prepares students for lifelong learning and leadership roles in the state, nation and world community.

Division: Academic Affairs **Unit Head:** Dr. Ruben A. Mazariegos

Unit Mission: The Department of Physics and Geology will provide students with a high quality education, allowing for a fundamental understanding of science and preparation for future careers. The department will serve the university in providing natural science core educational and degree requirements in the physical sciences and providing majors and minors with specialized courses required for their field. The department will strive to enhance the education of its students by providing expertise advising on degree and career options and opportunities such as teaching assistantships, individual research mentoring, and field trips.

Unit Goal #1: Obtain appropriate space for research labs, teaching labs, faculty offices and modernize existing lecture rooms

Link to UTPA Goal(s): 1. Ensure undergraduate student access and success

Unit Objective (Action Priority: #1 is highest)	Link to UTPA Objective	Expected Outcome for Unit Objective (AA-Measurable Objective)	Strategy(ies) to Achieve Expected Outcomes	Assessment Criteria, Evaluation Methods for Expected Outcome	New Resources Needed in FY06
Secure space for research labs. (1)	1,3	Increase research productivity by obtaining external funds (Research Equipment as NSF – MRI) and by increasing the number of publications.	Provide tenured and tenure track faculty with release time for research and with the appropriate lab space for research by including it in the new infrastructure plans for the College of Science	<ul style="list-style-type: none"> Verify that the research lab space is obtained or included in the infrastructure plans for the College of Science and Engineering. 	Release time and 2 research labs for two new tenure track faculty.

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			and Engineering.	<ul style="list-style-type: none"> Keep track of number of publications and awarded research proposals. 	
Secure space to teach additional labs and lectures. (2)	1,3	Satisfy the increasing demand for our science core courses (increase in SCHs).	Use R25 to reserve a large lecture classroom and request 2 new dedicated labs.	Compare SCHs production every semester.	One dedicated large classroom (90 students or more) for physical science lectures and the installation of multimedia equipment in Physical Science Rooms 130, 138, 109, and 152.
Secure space for faculty offices. (3)	1,3	Provide new faculty with appropriate office space.	Request 2 new offices to the COSE.	By the end of the Spring 2006, verify that office space for 2 new faculty has been assigned.	Office with furniture for two new tenure-track faculty will be needed.

Unit Goal #2:

Develop appropriate physical science, physics and geology lab infrastructure and adapt it to the purchase of new lab equipment.

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Upgrade existing lab equipment. (4)	1,3	Improve the students' lab experience by using the most appropriate	Obtain new lab equipment using technology fee funds	Compare every semester the results of the Natural Science	Maintenance funds to keep the new lab equipment in good

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		lab equipment.	and university funding.	Core Curriculum Assessment Examination and also use surveys for each lab course.	working condition.
Identify weak lab experiments and eliminate them. (5)	1,3	Eliminate some lab experiments as indicated by existing surveys.	According to existing surveys some labs will be eliminated and substituted by more relevant lab experiments.	By the end of Spring 2006, a survey will be performed to get indicator of student satisfaction for the new lab experiments.	None
Develop new lab experiments; write new handouts for new lab equipment. (6)	1,3	Create more relevant lab experiments with their corresponding Pre-Labs and lab handouts.	Provide release time to Lab Coordinators and/or merit points to develop Pre-Labs and lab handouts.	Count the number of new Pre-Labs and new lab handouts developed by the end of the Spring 2006 semester.	25 % release time for two lab coordinators.
Acquire multimedia equipment for lab demonstration. (7)	1,3	Improve students' lab experience by using multimedia lab demonstrations and instructions.	To obtain multimedia equipment for our lab rooms using university funds.	Verify by the end of the Spring 2006 if the multimedia equipment has been installed in lab rooms 109, 130, 138, and 152.	If multimedia lab equipment is not installed by the end of Spring 2006, extend this request to AY07.
Acquire new equipment and software for computerized data analysis in the laboratories. (8)	1,3	Provide students with the experience of analyzing lab data using computers.	Obtain new lab equipment using technology fee funds and university funding.	Perform a survey by the end of the Spring 2006 semester to evaluate students' satisfaction on using computers to analyze data.	Maintenance funds to keep the new lab equipment in good working condition.

Unit Goal #3:	Implement and promote Departmental Outreach activities
Link to UTPA Goal(s):	1. Ensure undergraduate student access and success

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Elect an outreach departmental representative to serve as coordinator. (9)	1, 3	Improve student recruitment and retention.	Elect the departmental outreach representative during the Fall 2005 semester.	Verify by the end of the Fall 2005 semester that an outreach departmental representative has been elected.	None
Develop a working schedule and coordinate visit to local schools, expos, job fairs, and science events. (10)	1, 2, 3	Improve student recruitment and retention.	Invite and/or visit local high school science coordinators to schedule visit to local high school to promote physics and geology.	Verify by the end of the Fall 2005 that this activity has been accomplished or its progress.	None
Generate a list of valley high schools and physics/geology/physical science instructors that could serve as contact personal. (11)	1, 2, 3	Improve student recruitment and retention.	Get the information from Texas Education Agencies available on the Internet.	Verify by the end of the Fall 2005 that this activity has been accomplished or has progress.	None
Seek funds to restore planetarium to resume planetarium shows and to enhance astronomy courses. (12)	1, 2, 3	Improve student recruitment and retention. Motivate students from local high school to pursue a career in Science or Engineering.	Contact local groups such as the Rotary Club and Power Squadron. Coordinate fundraising activities with External Affairs.	Verify by the end of the Spring 2006 the amount of funds that have been obtained for the new planetarium's digital projector	Consult with the upper administration if they are willing to match the fundraised amount or fund this important item for AY06.
Develop new flyers and	1, 2, 3	Improve student	Create new	Verify by the end of the	None.

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department webpage. (12)		recruitment and retention	departmental flyers and update the departmental webpage to promote research and education in physics and geology.	Fall 2005 that this activity has been accomplished.	



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Secure space for research labs. (1)	1,3	Increase research productivity by obtaining external funds (Research Equipment as NSF – MRI) and by increasing the number of publications.	<ul style="list-style-type: none"> Verify that the research lab space is obtained or included in the infrastructure plans for the College of Science and Engineering. 	<ul style="list-style-type: none"> Research Lab space remains as an obstacle for the Physics and Geology faculties. No specific plan exists at this point to provide Physics 	<ul style="list-style-type: none"> The College of Science and Engineering is making its best effort to address the generalized lack of research space in the college.

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			<ul style="list-style-type: none"> Keep track of number of publications and awarded research proposals. 	<p>and Geology with the appropriate research space infrastructure.</p> <ul style="list-style-type: none"> During AY06 14 research proposal were submitted, 2 ongoing grants, and one new NSF research grant in the amount of \$1,000,000 was awarded to two Physics and Geology faculties, one of them being the PI. During AY06 the publication activity is as follows: nine published, four in press, and five submitted. 	<ul style="list-style-type: none"> Research grants proposal submission increased by 64% when compared to AY 2004-2005. New workload policy (9 hours of teaching per semester) has had a positive impact on grant activity. Publication activity increased by 100% when compared to AY 2004-2005. New workload policy (9 hours of teaching per semester) has had a positive impact on grant activity.
Secure space to teach additional labs and lectures. (2)	1,3	Satisfy the increasing demand for our science core courses (increase in SCHs).	Compare SCHs production every semester.	<ul style="list-style-type: none"> Two new dedicated physical science labs were assigned to teach physical science core courses. No 	<ul style="list-style-type: none"> Physical Science labs have been scheduled for the Fall 2006 semester to be offered in the new physical

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				additional lecture space was requested since R25 is in charge of assigning space to teach lectures. <ul style="list-style-type: none"> SCHs increased by 11.11% when comparing fall 2005 (4,979) with fall 2004 (4,356). SCHS decreased by -1.7% when comparing spring 2006 (5,215) with spring 2005 (5,305). 	science lab rooms located in the Science Building. <ul style="list-style-type: none"> For the Fall 2005 semester more lectures and labs were offered resulting in an 11.11% increase in SCHs. For the Spring 2006 semester and unexpected decrease in SCHs by -1.7% was noticed.
Secure space for faculty offices. (3)	1,3	Provide new faculty with appropriate office space.	By the end of the Spring 2006, verify that office space for 2 new faculty has been assigned.	Office space for 2 new faculties has been secured in the Science Building, Third Floor, effective in the Fall 2006 semester.	Office space for 2 new faculties has been assigned.

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Upgrade existing lab equipment. (4)	1,3	Improve the students' lab experience by using the most appropriate lab equipment.	Compare every semester the results of the Natural Science Core Curriculum Assessment Examination and also use surveys for each lab course.	About 30% new handouts for astronomy and physical science have been developed integrating the purchase of newly acquired lab equipment.	Partial release time was given to 2 faculties to develop physical science lab hand outs. One student assistant was assigned to the astronomy instructor to assist him in the development of new hand outs for the astronomy labs. The department has planned to continue with this activity.
Identify weak lab experiments and eliminate them. (5)	1,3	Eliminate some lab experiments as indicated by existing surveys.	By the end of Spring 2006, a survey will be performed to get indicator of student satisfaction for the new lab experiments.	About 15% of weak lab experiments have been replaced by new ones integrating recently acquired lab equipment. 80% of students are satisfied with the use of new lab equipment.	Purchased new lab equipment for science core courses and replaced 15% of weak labs. The department has planned to continue with this activity.
Develop new lab experiments; write new handouts for new lab equipment. (6)	1,3	Create more relevant lab experiments with their corresponding Pre-Labs and lab handouts.	Count the number of new Pre-Labs and new lab handouts developed by the end of the Spring 2006 semester.	10% of new Pre-labs and 15% new lab handouts have been developed.	Partial release time was given to 2 faculties to develop physical science lab hand outs. The department has planned to continue with this activity.
Acquire multimedia equipment for lab demonstration. (7)	1,3	Improve students' lab experience by using multimedia lab demonstrations and instructions.	Verify by the end of the Spring 2006 if the multimedia equipment has been installed in lab rooms 109, 130, 138, and 152.	Not totally implemented. Only one portable multimedia equipment for lab demonstration was acquired. New physical science lab rooms in the Science	No substantial change was made. Multimedia equipment for lab demonstrations is still needed in PS rooms 109, 130, 138, and 152.

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				Building will have multimedia equipment.	
Acquire new equipment and software for computerized data analysis in the laboratories. (8)	1,3	Provide students with the experience of analyzing lab data using computers.	Perform a survey by the end of the Spring 2006 semester to evaluate students' satisfaction on using computers to analyze data.	An exit survey for the astronomy/physics courses indicate that 90% of the students are satisfied with the use of computers in the lab.	Purchase of computers for PS 138 and PS 152 and integration of PASCO technology to deliver lab instruction. The department has planned to extend this activity for the other science core courses.

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Elect an outreach departmental representative to serve as coordinator. (9)	1, 3	Improve student recruitment and retention.	Verify by the end of the Fall 2005 semester that an outreach departmental representative has been elected.	The outreach departmental representative was elected early in the Fall 2005 semester. Also, an outreach plan to improve student retention and recruitment has been developed.	The department has planned to continue with this recruitment and retention activity.
Develop a working schedule and coordinate visit to local schools,	1, 2, 3	Improve student recruitment and retention.	Verify by the end of the Fall 2005 that this activity has been	Visits to high school were limited due to scheduling conflicts.	The department has planned to assign 1-2 high schools visits to

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expos, job fairs, and science events. (10)			accomplished or its progress.	However an increase in recruitment activities by the tenured and tenure-track faculties was noticed.	each tenured and tenure-track faculty.
Generate a list of valley high schools and physics/geology/physical science instructors that could serve as contact personal. (11)	1, 2, 3	Improve student recruitment and retention.	Verify by the end of the Fall 2005 that this activity has been accomplished or has progress.	A list targeted high schools for recruitment purposes was generated.	The department has planned to use the list of targeted high schools to improve recruitment and retention.
Seek funds to restore planetarium to resume planetarium shows and to enhance astronomy courses. (12)	1, 2, 3	Improve student recruitment and retention. Motivate students from local high school to pursue a career in Science or Engineering.	Verify by the end of the Spring 2006 the amount of funds that have been obtained for the new planetarium's digital projector	Only about \$2,000 were collected from donations for the acquisition of a digital projector for the planetarium (the goal is \$150,000).	A designated account for the planetarium was created. The department has planned to continue with this activity.
Develop new flyers and department webpage. (12)	1, 2, 3	Improve student recruitment and retention	Verify by the end of the Fall 2005 that this activity has been accomplished.	The new departmental webpage was available by end of the Fall 2005. Lab handouts, a degree plan for the BS in Physics, and required courses for the GIS, physical science, physics, and Earth Science minors are posted on the departmental webpage.	Promotional material for the department was updated and made available to students and public in general. The department has planned to use our webpage to post job opportunities in physics to improve student recruitment and retention.