

Unit Effectiveness Plan for 2001-2002
Department(Unit): Physics
College (Division): Dean - College of Science

Unit Mission or Purpose:

The mission of the Department of Physics is to serve the University, the local community and the nation by the provision of first rate programs in physics teaching and research and the dispensation of scientific, educational and related services to the widest possible constituency. In following this mission the department aims to work in a manner consistent with all the more general aims and aspirations of the University mission.

Articulation of how unit mission/purpose relates to University mission:

The Departmental mission is isomorphic with that of the University in every area where the department has, or can develop, the necessary expertise and resources.

Intended outcome	Related Institutional Goal/Objective/Strategy	Action Steps	Method of Assessment (Who, What, When)	Results of Assessment	Proposed Changes and Recommendations for Improvement	Resources Needed for Proposed Changes
Undergraduate student learning: Students in Phys 1441-1444 will learn problem-solving skills.	Goal 1, Objective 1.1 To promote and sustain the excellence of undergraduate programs that prepare students for careers and graduate studies.	1. The department will offer a physics clinic open to all students in freshman physics classes every afternoon during the week.	The associate chair will interview students and tutors to determine the effectiveness of the clinic. He will make recommendations to the chair on changes.	The associate chair reported that only about 10% of students attended the clinic. Most of these were B and C students trying to improve their grades. A students and D and F students did not bother with the clinic. Nearly all of the many students using the clinic were very happy with improved	During exam weeks Room 114 Science Hall could not hold all the students seeking help. Recommended improvement of the clinic would be to find an additional room or one much larger room for these time periods. Clinic fees could be stretched further by using qualified work study students.	A larger room is needed for the clinic.

				grades. Tutors also reported that all students were pleased with the format of the clinic. An unexpected benefit of the clinic has been the fellowship generated among physics majors working in the clinic.		
Undergraduate student learning: Students in 1441 and 1443 classes will show proficiency in basic algebra and trigonometry.	Goal 1, Objective 1.1 To promote and sustain the excellence of undergraduate programs that prepare students for careers and graduate studies.	1. In the first lab period instructors will give a review of essential mathematics. 2. Students will be given a test over math skills.	1. The Associate Chair will tabulate scores on exams and provide them as information to instructors of the lecture sections. Results will be used to direct students to the physics clinic for help on specific math deficiencies.	Tests were given to only a few selected classes once during the previous year. The majority of students making less than 60% on the exam were found to fall in the 30% who flunked or dropped 1441 or 1443. Math preparation served as a strong indicator of which students would have trouble in the classes.	Only a couple of classes were sampled because of instructor resistance to the additional paperwork. This reluctance will be discussed in a faculty meeting in which the chair will try and get a consensus on applying the exam uniformly in 1441 and 1443. We will seek methods of stimulating these at risk students to use the physics clinic (e.g., bonus points for attendance, etc.).	This new test given in every lab section of 1441 and 1443 will extend the amount of time for paying lab assistants. Adding one lab period to 1441 and 1443 is equivalent of one additional TA per semester to the existing workload.

<p>Graduate education: Graduate students will gain knowledge of a broad spectrum of physics research topics by attending the weekly physics colloquium.</p>	<p>Goal 6, Objective 4.1 To increase the University's commitment to research and creative activity.</p> <p>Objective 1.3 To promote and support a student-centered academic community that enables students to achieve their educational goals.</p>	<p>1. Require graduate students to attend weekly physics colloquium.</p>	<p>1. The Chair of Physics will monitor attendance and participation of graduate students in the Colloquium series.</p> <p>2. At the end of the semester the chair will interview each graduate student to determine which of the Colloquia were understood in basic content.</p> <p>3. Results of the interviews will be used to plan the next colloquium series.</p>	<p>The chair checked attendance of students and faculty at every colloquium during the year. About 70% of students and 65% of the faculty attended on the average. Some of the missing students had lab assignments during the colloquium. Interviews with students at the end of the semester revealed that they had a hard time understanding most talks. This was expected. Some requested a broader, more general set of talks.</p>	<p>The chair has asked the colloquium chairs to plan a set of talks which are broader in interest and not too detailed. The colloquium chairs have asked for additional funds to bring in more, better speakers. The Chair of Physics has put them in contact with the APS colloquium service from which minority and female speakers may be chosen in a variety of current topics in physics.</p>	<p>The colloquium committee needs about \$5,000 per AY to attract exciting, high quality speakers.</p>
<p>Graduate Education: PhD students will demonstrate mastery of core graduate courses.</p>	<p>Objective 1.3 To promote and support a student-centered academic community that enables students to achieve their educational goals.</p>	<p>1. During their first semester at UTA all PhD students will be required to review their core graduate courses.</p> <p>2. After the first semester all PhD students will be</p>	<p>1. A faculty committee will compose and administer the PhD qualifying exam.</p> <p>2. The Graduate Studies Committee will determine which students pass or fail the exam.</p>	<p>The PhD exam was given in February to three students. Only one of the three students who took the four</p>	<p>The pass/fail ration for these exams has been low for the last several years. This reflects high standards for the exams, but</p>	<p>A faculty member could be given release time to work with all students preparing for the PhD exams,</p>

		required to take a qualifying exam over core courses.	3. The committee will determine remedial actions for those who fail, and each student will be allowed at most one more chance to pass an examination.	exams made a passing score on all parts. One student failed only one section and was asked to retake the exam for that section after studying for several months. The third student failed two of the four sections and was suggested remedial work. That student later dropped out of graduate school for other reasons, but hopes to return later.	suggests that students need help preparing for the exams other than taking classes. To eliminate the possibility of unusually difficult exams it was proposed that the faculty should meet and discuss each section of the exams before they are given to the students. This has been done in the past with some improvement in the clarity of the questions.	helping them work through old sets of exams given in the department.
Research: Increase the amount of extramural funding.	Goal 4, Objective 4.2: To increase the number of opportunities for faculty development	Encourage faculty to increase grant submissions and reward successful applicants with pay increases.	Using grant submissions and success in 1998-1999 as a baseline, the Chair will monitor the number of proposals submitted by each faculty member. The percent increase in external funding will be used to evaluate success of the policy. Faculty winning new awards will get salary increments.	During the AY 2001-02 13 of 16 faculty submitted proposals. The total number of submissions increased over the base year by over 30%. As a result the total external funding increased over the base year by 56% to a level exceeding \$1,800,000.	Continued growth of funding will require additional faculty or submission of large collaborative grants. The policy of rewarding faculty for gaining external funding should continue.	Some resource should become available through collaborations in the new INSERT center at UTA. Cost sharing on proposals will also be needed.

				Several faculty received additional merit salary increases as a result. Three faculty were given one time bonuses.		
Outreach/Service: Attract visits of students, teachers, and the general public to UTA, and the Department of Physics.	Goal 6, Objective 6.2 To increase public awareness of programs and activities at UTA.	<ol style="list-style-type: none"> 1. Offer monthly shows to the general public at the physics planetarium. 2. Offer special planetarium shows to secondary schools and organized groups which may contain or influence students. 3. Visitors to the planetarium will be given information about the College of Science and UTA. 	1. The Chair will monitor attendance at monthly shows and tabulate the total number of visits of all sorts to the planetarium.	The chair monitored the planetarium usage during the year. The astronomy club, Olympus Mons, provided a show on the first Friday of each month during the academic year. In the summer they provided shows for educational programs for secondary students visiting the College of Science at UTA. The latter were provided free of charge, but the public shows charged \$2 per person. The planetarium would attract	Improvements recommended are (1) new planetarium (2) new software for the shows and (3) appointment of a planetarium director as a permanent staff member.	The new planetarium is being constructed as part of the new Chemistry and Physics building. It will include a new digital projector and sound system and seat 200 persons. When complete it should become a major attraction in the metroplex with thousands of visitors per year, and will need a full time director.

				more attendance if it were modernized.		
<p>Advising: Through effective advising, students will progress through the program in a more appropriate time frame.</p>	<p>Goal 1, Objective 1.3 To promote and support a student-centered academic community that enables students to achieve their educational goals.</p>	<p>To provide personal counseling for each incoming graduate student: 1. New graduate students will attend an orientation meeting. 2. Each new student will meet with an MS or PhD advisor to prepare a tentative program of work. 3. Progress of all students toward degrees will be monitored by graduate advisors to ensure that they complete degrees within state-mandated time limits.</p>	<p>1. The Chair of Physics will review the records of each graduate advisor to determine progress toward degree for each student. A comparison will be made at the end of each academic year with the previous year of what per cent of students submitted tentative programs of work, passed qualifying or comprehensive exams, submitted final programs of work, and/ or completed degrees in the appropriate time.</p>	<p>The chair determined that all students had been properly advised and submitted the required programs of work, taken the appropriate exams. Some students were found to have lingered in the masters program too long.</p>	<p>The chair introduced a new rule requiring that any student supported by the department or grants in the department must enter the PhD program upon completion of 30 semester credit hours in the MS program. This rule will expedite the completion of MS degrees. The chair offered incentives to faculty whose PhD students complete their degrees. These policies should be continued.</p>	<p>This action should be successful without additional resources.</p>
<p>Oral proficiency: Physics students will acquire the skills to communicate orally as evidenced by a public lecture given in the senior seminar course.</p>	<p>Goal 1, Objective 1.1: To promote undergraduate programs that prepare students for careers and graduate studies.</p>	<p>Evaluate oral presentation of all physics majors in Physics 4117.</p>	<p>1. Use of checklist of oral presentation skills. Students must be competent in each skill to pass. 2. Instructor will test students to determine what % is proficient in each skill.</p>	<p>The instructor of this class reported that all physics students were competent in library research skills. Some students needed help in making oral presentations</p>	<p>The instructor could assist students in presenting papers at the Texas Section meeting of the APS/AAPT.</p>	<p>Each student would need \$100 to \$200 for a trip to the APS/AAPT meeting.</p>

				and were given additional help in this area in order to meet the standards for the class. At the end of the semester all students were deemed competent by the instructor.		
Computer skills: Phys 4117 students can use word processing, spreadsheets, data, bases, e-mail and the internet, and electronic access to the library.	Goal 1, Objective 1.1: To promote undergraduate programs that prepare students for careers and graduate studies.	Review course goals to ensure instruction is provided in each of these skills.	1. Instructor will test students to determine what % is proficient in each skill.	As expected, all physics majors were found to be competent in all computer skills.	The current procedures are working well.	None needed.

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