

Physics – Strategic Goals and Action Plans.

Goal 1: To increase undergraduate enrollment through recruitment and retention.

The department will actively recruit promising students through outreach to local high schools. This will take the form of presentations by faculty or students at interested high schools. In addition, the department will hold workshops for local physics teachers to train them in the Advancement Placement curriculum and to expose them to our facilities and programs. The hope is that these teachers will promote the department to their graduating seniors. Any outreach activity (astronomical observations, popular lectures, Pumpkin Drop, etc.) will be widely announced to the public in general and local schools in particular.

Local high school students who desire to partake in research in the department will be encouraged to do so. Efforts will be made to advertise this option and to highlight any successes. Faculty involved in such work will be credited accordingly in their annual assignments.

The department will take great pains to retain its students through advising and mentoring, as well as the introduction of changes to make the curriculum more enticing and relevant to the job market (see item 3). We will also make efforts to support an active student life. In particular, a physics students club and/or a Society of Physics Students chapter will be nurtured. Adding undergraduate research (item 3) is also known to be an effective tool to aid in student retention.

Goal 2: To increase graduation rate and improve time to graduation.

The department will be proactive in the advising of its students, providing them with curriculum maps and ensuring that essential classes are offered in a timely manner. We will be flexible in accepting substitutions or alternative courses if they aid the student towards graduation.

For the graduate students a more streamlined approach to the qualifying exam will be implemented, with the goal of having qualified students admitted to the Ph.D. program as quickly as possible and providing other avenues for those students deemed unqualified for Ph.D. level research.

Goal 3: To enhance the undergraduate experience through mentoring, curriculum changes, and research experience.

All upper level physics undergraduates will be required to have a faculty advisor/mentor. The role of the mentor is to expose students to the life of a professional physicist, possibly to supervise them in research, and to discuss career options. This assignment will be distributed equitably amongst all faculty.

To make the curriculum more relevant to the job market three courses will be added: two seminar classes (PHY 1090 and 3930, one credit each) and a computational physics course (PHZ 3151C, 4 credits). The freshman seminar class will expose the students to the department, discuss curriculum and career options. The junior seminar will teach students professional skills such as the use of LaTeX, Mathematica, etc., the perusal of research literature, entrepreneurship, and interview techniques. The computational physics course is being developed in direct response to student requests to have courses that are more relevant to possible careers. Necessary adjustments to the curriculum will be made so that these extra classes do not add additional credits or delay graduation. A proposal along these lines has already been discussed by the faculty and formally approved.

All undergraduate students will be strongly encouraged to be involved in research. To this end, three of the upper division courses will be given the new Research Intensive (RI) designation, indicating that there is a strong research component to the course. In addition, students will be encouraged to enroll in undergraduate research through the Office of Undergraduate Research and Inquiry. Presentation at Research Days and publication in the University's research journal (FAURJ) will be actively promoted. Faculty involved in such activities will be given credit in their assignments.

Our best students will be encouraged to seek the designation of a B.S. with Honors. The department will identify and actively pursue such students and assist them by adding appropriate Honors Compacts as needed.

Goal 4: To grow the medical physics program

The department offers a Professional Science Master in Medical Physics (PSMMP), a program that has rapidly grown in recent years yet offers possibilities for further growth. The department will explore the feasibility of establishing an undergraduate program in Medical Dosimetry, possibly leading to a double major, and a five-year dual BS/MS degree. The PSMMP currently offers only a specialization in Radiation Therapy; a specialization in Imaging will be offered as an additional option. Ultimately, the department would like to establish a Ph.D. program in Medical Physics. (See also item 5.)

In addition, the department will build on current strengths in biophysics, medical physics, and neuroscience, to create an area of excellence at the undergraduate level, centered around "the physics of living systems". Such a concentration might in particular attract premedical students to take physics as a major, rather than the more traditional biological major.

Goal 5: To add a faculty line through a strategic hire in medical physics

The full CAMPEP¹ accreditation of the PSMMP program expires on December 31, 2016. One junior faculty member has already been hired as requested by the accreditation board. In order to have the accreditation extended for another five years the department is requested to make an additional hire in medical physics. Clearly, this must be a high priority. These hires are expected to be top-notch researchers able to attract external funding.

Goal 6: To add a faculty line in experimental physics

In order to fulfill its educational and research mission, the department needs to hire one or more experimental physicists in an area that is as yet to be determined, but that needs to fit in with current areas of strength as well as the university's strategic plan. Biophotonics is being considered as a field that would meet these requirements. We would also consider hiring a team, with some of the hires in other relevant departments, such as biology (possibly on the Jupiter campus), or in the Colleges of Engineering or Medicine. Again, only high-quality researchers able to attract outside funding will be considered. An experimental hire is a high priority for the department.

Goal 7: To contribute to FAU's strategic plan, and to enhance the department's visibility within FAU and outside

The department aims to be a key player in the various initiatives that are part of the University's strategic plan. We will encourage interdisciplinary research and hires, building in particular on current active collaborations with the College of Engineering and the Center for Complex Systems and Brain Sciences.

In concert with a parallel effort in the Charles E Schmidt College of Science (CESCOS), the department will renovate and enhance its Web-site. In particular, tags to curriculum maps, news and current events, student and alumni activities will be added. The Web-site will be regularly updated.

The department will maintain contact with its graduates through social media and electronic newsletters. For those alumni who so desire links will be provided on the departmental Web-site. We will hold annual alumni days to which all physics graduates as well as current students are invited. This will be coordinated with the CESCOS to avoid duplication of effort. We will conduct exit interviews with all graduates to critically analyze their experience and, if warranted, take corrective action.

¹ CAMPEP = Commission on Accreditation of Medical Physics Educational Programs