Saint Peter's College
Physics Program
Department of Applied Science and Technology

Mission Statement

In support of the College mission, the physics program strives to foster the development of the whole person in preparation for a lifetime of learning, leadership, and service in the area of the Natural Sciences within a diverse and global community. Committed to academic excellence and individual attention, the Physics Program provides a broad-based, challenging education in Physics, informed by values, to students with diverse backgrounds and interests.

Department Outcomes for Students, Methods for Assessment and Criterion for Success

Intended Outcome

Intended Outcome 1

Students should demonstrate a working knowledge of the five general areas encompassed by the Physical Sciences.

Assessment/Criterion for Outcome 1

All students who graduate with a degree in Physics will have completed course work in the areas of Mechanics, Electrodynamics, Thermodynamics, Basic Quantum Mechanics and Modern Physics. This course work, being traditionally theoretical, will be enhanced by experimental components when appropriate.

Members of the program are actively pursuing opportunities to acquire use of large instruments commonly employed in industry for educational use and the development of experimental courses.
**Intended Outcome 2**

Students should acknowledge, understand and appreciate the ethical and moral of research in physics, its impact on humanity, society and history.

**Assessment/Criterion for Outcome 2**

In each course, where appropriate, the student should be introduced to the ethical and moral implications of the research undertaken in that area of physics by studying and discussing: historically significant discoveries in physics, inventions that directly utilize the laws of physics and the impact that such discoveries and inventions have had on the lives of all human beings. Physics students will be encouraged to take a course in Bioethics, to improve their awareness of the interactions between advances in the field of Physics and applications to Medicine, Biology, Biotechnology, Biochemistry and related fields.

**Intended Outcome 3**

Students should develop effective writing and oral communication skills.

**Assessment/Criterion for Outcome 3**

Students must successfully complete appropriate writing assignments in each course offered by the department. In at least one course above the freshman year, each student will also prepare and deliver an oral presentation. Students must receive a satisfactory evaluation as a condition for passing the course.

**Intended Outcome 4**

Students should be aware of and be able to utilize materials and procedures necessary to search and solicit post-graduate educational programs and/or employment opportunities. The students should develop skills necessary to make application and interview for such post-graduate educational programs and/or employment opportunities.

**Assessment/Criterion for Outcome 4**

The department will assist students in obtaining post-graduate career information, and schedule relevant activities related to developing awareness and the skills necessary
for post-graduate success. The department of Applied Science and Technology will keep track of the success graduates of the Physic major have in obtaining employment in the field after graduation, and successful acceptance to graduate or professional schools. Attention will be paid to the graduating students overall GPA, number of credits taken in the major and other parameters which might be good indicators of student success in attaining their desired goals after graduation.

**Intended Outcome 5**

Students should be aware of the importance of the education of the general public in physics and public acceptance and support of physics research to its success and growth.

**Assessment/Criterion for Outcome 5**

Saint Peter's College has developed a modest but growing chapter of SPS/Sigma Pi Sigma (Society of Physics Students/National Physics Honors Society). Membership is open to all students. Students in SPS in conjunction with program faculty engage in the development of outreach materials and demonstrations for Hudson County grade, middle and high schools.

**Intended Outcome 6**

After completion of the course of study in Physics, 90% of the graduating students will rate the Physics Program and its curriculum as satisfactory of better.

**Assessment/Criterion for Outcome 6**

Alumni surveys pertaining to the Physics Program will be administered to Saint Peter's College Physics Alumni every five years.

**Course Specific Assessment Methods**

The Physics Program Currently utilizes a variety of methods to assess student's progress and success.
**Tests:** Tests are almost never multiple choice or essay. The basic skill tested in a physics course is problem solving, especially multistep problem solving. Tests consist mainly of a short number of algebra, trigonometry and calculus based problems. Students are sometimes asked to identify, list or describe basic laws of physics.

**Quizzes:** Short quizzes are employed on a weekly basis to assess a student's knowledge of recent material. Memorization is usually required.

**Lab Reports-Informal:** Students working in small groups complete a variety of involved experiments designed to complement material taught in class. For Informal reports students are asked to collect, analyze and neatly present data and the results of analysis by the end of class time.

**Lab Reports-Formal:** Students are required to produce "professional quality", typed research reports for several experiments during the semester. Formal reports are individual and are not to be done in groups.

**Group Work Sheets and Projects:** During class traditional lecture is only part of the learning experience. Students are giving assignments, related to lecture material, to do in class in small groups. The in class assignments are to become part of their notes. At the end of lecture students present their answers to the class.

**Computer Use:** In both lecture and lab students are encouraged (sometimes required) to use computer methods to analyze data or model simple physical systems.

**Power Point Presentations:** Upon completion of research projects a formal oral presentation to fellow research students and appropriate faculty will be given by the student.

**Faculty Activity in Assessment**

Once we begin formal assessment, the program, through its Chair in Department of Applied Science and Technology, will discuss program goals as a regular agenda item at department meetings. We will use assessment data to enhance the program’s strengths and discover and improve its weaknesses. We will continually evaluate the program and its assessment tools allowing us to improve the Physics Program. The Chair will on a yearly basis compile relevant data on the students progress in this major
and use this data to guide the implementation of the departments goals for the education of these students