

## Physics

A department in the College of Natural Sciences and Mathematics offering the B.A., B.S., M.S., and Ph.D.

### ■ The Review Process

This was a standard AQAD review. Reviewers were:

Thomas Applequist (Yale University)  
Milton Cole (Pennsylvania State University)  
Gary Gladding (University of Illinois)  
Allen Goldman (University of Minnesota)

### ■ Executive Summary

The visiting team found that the department's research emphases — in condensed matter physics and in microphysics — were appropriate given the department's size. However, the team also concluded that this range of interests was too narrow to attract the most highly qualified graduate students, and strongly urged development of a third major research area. The department had already expressed the desire to move into biological physics, and the team supported that choice. The department's work in physics education research was also praised, with the team observing that the department "is widely recognized as a leader in the field."

The undergraduate program was found to be strong, although the team felt that the department's contributions to General Education and other service instruction have "come at the expense of providing the full range of undergraduate and graduate courses for majors." The innovative use of instructional technology was seen as admirable and important, but not sufficient to address the need for instructional resources. The problem of course coverage was seen to be most acute at the graduate level where, "as a consequence of a shortage of faculty, a full range of graduate level courses is currently not offered." The team felt that this deficiency could undermine graduate recruitment, as competitive programs typically offer "twice as many [graduate] courses in any given semester." The team's proposed solution was to shift teaching resources from General Education to instruction at the graduate level until such time as the size of the faculty can be increased.

The team cited five specific challenges facing the department:

- Increased funding from the campus. The team urged that the University "recognize and meet the need for the space and financial resources" necessary to increase the size of the faculty and launch the life sciences physics initiative.
- Faculty size. The team suggested that impending retirements are "indicative of a crisis situation," and called for a "significant expansion of faculty size" from 30 to 35.
- Space and renovation. The physical location of the department in two separate buildings was found to be unsatisfactory. Moreover, research facilities in Hasbrouck "cannot be considered to be modern laboratory space up to contemporary standards."
- Start-up costs. The team concluded that the University administration has failed to provide adequate start-up funds to support faculty hiring, and "unless this problem is remedied, it will guarantee a deterioration of the reputation and morale of the department in the future."

- Support and services. The team found the departmental machine shop to be antiquated, and recommended operating it as a cost center so as to generate funds for modernization. The team also called for additional full-time personnel to support computing services.

In addition, the team recommended improving mentoring of new faculty, increasing diversity within the department, and strengthening the colloquium series.

#### ■ Results of the Review

The department generally concurred with the team's recommendations, and indicated willingness to implement those within its immediate control (shift teaching resources to the graduate level, consider a cost center approach to the machine shop, institute a new mentoring program, work to increase diversity, and consider strengthening the colloquium series). The Dean supported these actions, and echoed the call for additional funding from the University for faculty hiring (especially an early appointment to the new Gluckstern chair to launch the life sciences physics initiative), for faculty start-up, and for facilities improvements.