

# MAJOR FIELD ASSESSMENT: EVALUATION AND USE OF DATA

## B.A. IN PHYSICS

### KNOWLEDGE:

#### 1. *INTENDED OBJECTIVE AND ASSESSMENT TECHNIQUES*

A. *OBJECTIVE*: Graduating seniors should have an adequate knowledge of the various subfields of classical and modern physics, and should have some knowledge of the landmarks in the development of classical and modern physics

B. *ASSESSMENT CRITERION*: The ETS's MFAT in physics will be given each semester. 75% of physics majors should improve by 25 percentile points between the first semester and the semester in which they complete their physics coursework.

#### 2. *SUMMARY OF ASSESSMENT METHOD*:

A. METHOD OF ASSESSMENT: The ETS's MFAT in physics was given to physics majors in Spring 1992 and Spring 1993; eight students took the test in 1992, and six took it in 1993. Three students took the test both in 1992 and 1993.

B. RESULTS OBTAINED: Of the three students who took the test both in 1992 and 1993, two showed no change in their score, while the third improved by seven percentile points.

C. CHANGES IN THE PROGRAM: A special topics course in Statistical Mechanics was offered in the Spring of 1994 to help increase the breadth of knowledge of advanced physics students.

D. PLANNED CHANGES IN THE PROGRAM AND PROJECTED DATE FOR ACCOMPLISHING THEM: 1) It is planned that a seminar or special topics class devoted to systematic review of the undergraduate curriculum, and preparation for the Graduate Record Exam Advanced Test in Physics, will be offered for physics majors who intend to apply to graduate school in physics; it is projected that this offering will be available by Spring of 1996; 2) The pilot course in Elementary Physics employing Guided Inquiry (PHY 141/143, Section 02), which is being offered in Fall of 1994, will be evaluated with the intention of adapting various aspects of that curriculum into the courses offered to physics majors.

## **SKILLS:**

### **1. INTENDED OBJECTIVE AND ASSESSMENT TECHNIQUES**

A. **OBJECTIVE:** Graduating Seniors should: 1) have problem solving skills; 2) be competent in laboratory methods; 3) be competent in mathematics and the use of computers.

B. **ASSESSMENT CRITERION:** Although the MFAT and Southeastern's Mathematics Proficiency Exam will be taken into account as indicators of competence in mathematics, the primary measure of competence in both mathematics and use of computers will be the expectation that the student maintain a 2.0 grade point average in their mathematics and computer science coursework.

### **2. SUMMARY OF ASSESSMENT METHOD:**

A. **METHOD OF ASSESSMENT:** The grade point average of physics majors in their mathematics and computer science courses was evaluated.

B. **RESULTS OBTAINED:** All physics majors at the Junior or Senior level maintained a grade point average in their mathematics and computer science course in excess of 2.0.

C. **CHANGES IN THE PROGRAM:** The course "Mathematical Physics" (PHY 331), which was offered in Fall of 1993, incorporated expanded and enriched coverage of topics in linear algebra, linear vector spaces, and linear function spaces.

D. **PLANNED CHANGES IN THE PROGRAM AND PROJECTED DATE FOR ACCOMPLISHING THEM:** Advanced laboratory activities in electronics, computers, and modern physics will either be integrated into existing lab courses, or a new lab course will be developed to accommodate them; projected date is Spring of 1996.

## **ATTITUDES:**

### **1. INTENDED OBJECTIVE AND ASSESSMENT TECHNIQUES**

A. **OBJECTIVE:** Majors should feel that: 1) they have been given every reasonable opportunity to learn and grow as a physicist; 2) the physics faculty were concerned about their progress and performance and made themselves available to offer assistance.

B. **ASSESSMENT CRITERION:** A departmental instrument has been developed to assess the attitudes of physics majors toward the physics faculty and curriculum. At least 60% of the graduating seniors should respond favorably to 50% of the indicator questions.

### **2. SUMMARY OF ASSESSMENT METHOD:**

A. **METHOD OF ASSESSMENT:** The departmental instrument — a questionnaire — has been mailed to all three physics majors who graduated during the past two years.

B. **RESULTS OBTAINED:** As of this time, no responses have been received.

C. **CHANGES IN THE PROGRAM:** No significant changes have yet been made.

D. **PLANNED CHANGES IN THE PROGRAM AND PROJECTED DATE FOR ACCOMPLISHING THEM:** 1) With the hiring of two new tenure-track faculty, it is intended that additional research opportunities for physics majors will be made available; these opportunities will become available when the new faculty are able to establish their laboratories and begin research on campus, probably during the 1995-1996 academic year. It is also *possible* that faculty may be able to involve students in off-campus research during the summers of 1995 and 1996. 2) When responses from graduating students have been received and evaluated, additional changes will be considered; the date is contingent upon obtaining student responses.