

WOMEN IN SCIENCE AND ENGINEERING (WISE) WEEK: A CAREER EXPLORATION PROGRAM FOR 11TH-GRADE WOMEN

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INTRODUCTION

The lack of knowledge and appreciation of what scientists and engineers do on a day-to-day basis continues to discourage young women from majoring in these fields. Consider that although women receive roughly 50% of the baccalaureate degrees awarded at Penn State, they receive only 29% of the science and engineering baccalaureate degrees conferred. Nationally, the number of prospective women science and engineering majors drops abruptly between the senior year of high school and the junior year of college. Current enrollment figures at Penn State (University Park) indicate that attrition rates for women in undergraduate engineering classes approximate 50%, while those in undergraduate science classes are about 45%. The junior year of high school through the early years of college is, therefore, an opportune time for recruiting and retaining women interested in science and engineering careers.

For the past five years, the WISE Institute has held a one-week summer program - WISE Week - the objective of which is to increase the pool of women pursuing science and engineering careers at Penn State.

GOALS & GENERAL OVERVIEW

The Women in the Sciences and Engineering (WISE) Institute represents a unique collaboration among the Penn State Colleges of Agricultural Sciences, Earth and Mineral Sciences, Eberly College of Science, Engineering, Health and Human and Development, and Liberal Arts. The WISE Institute has the following objectives:

- to raise awareness about, and identify ways of improving the climate for women in the sciences and engineering;
- to examine women's concerns in scientific and technical fields at Penn State, nationally, and internationally;
- to enhance the recruitment and retention of women administrators, faculty, staff, graduate and undergraduate students in these fields;
- to provide activities for women in the sciences and engineering at Penn State;
- to assist Penn State in attaining its goal of becoming a more diverse institution.

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WISE Week is a one-week residential career exploration program for 11th grade girls with an aptitude in science and mathematics. The students are divided into two groups, a science group and an engineering group. In this way, it is hoped to attune the workshops to each student's interests.

The WISE Institute's Director serves as the WISE Week coordinator. The workshops are generally conducted by faculty and graduate students from the WISE participating colleges. The majority of the instructors are usually women. In addition, four undergraduate women students are selected as Program Assistants (PAs). The PAs live in the residence halls with the high school students and assist with the week's activities. Program and clerical support is provided by the WISE Institute's Assistant Director and Budget Assistant. Penn State's Housing and Foods Services, and Conferences Services provides additional support.

WISE Week is publicized by dispatching the WISE Week Recruiting Brochure to high schools throughout the U.S. Special emphasis is placed on high schools in Pennsylvania, Maryland, New Jersey, and New York. The program receives additional promotion via special mailings and recruiting efforts in the Minority Engineering Program, the Women in Engineering Program, and the Diversity Enhancement Programs in the College of Earth and Mineral Sciences and the Eberly College of Science. A mailing is also sent to students identified from the admissions prospect database. Advertisements have also been placed in several summer program publications.

The current application form was developed five years ago and has only been altered slightly to address program modifications. A \$295 fee is charged and is used primarily for room and board for participants. Five to ten scholarships are usually offered to needy students depending on corporate funding in that particular year. WISE Week usually takes place the third week in June.

Screening and selection of WISE Week applicants is conducted by the WISE Institute staff and is based on the following criteria, all of which are outlined in the brochure: 1) performance in high school courses, especially science and mathematics; 2) standardized tests as shown on the high school transcript; 3) a letter of recommendation from a science or math teacher; and 4) a one-page essay that answers the question -"Why do you want to attend WISE Week, and what do you hope to gain from the experience?"

The WISE Week program includes the following activities:

- Eight hands-on workshops from disciplines within the colleges of Agricultural Sciences, Earth and Mineral Sciences, Engineering, Eberly College of Science, and Health and Human Development;
- two hands-on computer workshops;
- Informational discussions about educational issues, admissions to Penn State, financial aid;
- Interaction with female role-models via workshop instructors, panel discussions, and Program Assistants;
- Orientation session with students, parents, and staff the first day; and
- Closing luncheon with students, parents and staff.

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CRITICAL ANALYSIS & SUMMARY

It is expected that students participating in WISE Week would opt for careers in science and engineering, and that they will choose to pursue these careers at Penn State. In this regard, WISE Week has proven to be a tremendous success. While the vast majority of the student participants were undecided about specific careers in science and engineering, having completed the program, the vast majority of participants were confident in pursuing science and engineering careers. This was confirmed by a survey (Figure 1 below) recently conducted by the WISE Institute to participants from the 1995 through 1998 WISE Week programs.

**Figure 1. Women in the Sciences and Engineering (WISE) Week
Past Participant Survey**

As part of the fifth anniversary of the WISE Week program at Penn State University, we are gathering information on former participants of the program. If you or your parent or guardian could complete the survey below, we would be most grateful.

Name: _____ Year Attending WISE Week: _____

Year Graduated from High School: _____

1. Did you enter college/university after high school? _____
2. If 'yes', at what college/university did you matriculate? _____
3. What major did you select upon entrance into college/university? _____
4. Have you changed your major since your original selection? _____
5. If 'yes', to which major/majors did you change? _____
6. Have you or are you considering graduate school after college? _____
7. Did you receive a scholarship or other funding to attend college? _____

Comments:

Thank you for participating in our survey. Please mail the survey to the WISE Institute in the enclosed, self-addressed stamped envelope and return by January 5, 2000 or at your earliest convenience. If you have any questions about the survey, please feel free to contact us at the address or phone number above or email us at wise@psu.edu. For more information on the WISE Institute, look us up on our website at <http://www.psu.edu/dept/wise/>.

The WISE Week Participant Survey took place in January 2000 and was sent to all participants from 1995 through 1998. Participants from 1999 were not included, as they would not have completed high school until June 2000. Surveys were mailed to 'the parent or guardian' of each participant since the expectation was that these students were now graduated and in college, and only home addresses were available.

As expected, the survey reported that all respondents had opted to attend college after graduation from high school. As a recruitment tool for Penn State, WISE Week has proven successful. Almost 25% of respondents matriculated at Penn State, with the next highest recruitment level at Lafayette University with 7% (Figure 2). The results on major selection were just as successful. Ninety-one percent of the respondents chose majors in Science/Engineering/Mathematics (SEM) fields, with only 9 percent choosing non-SEM majors. A further breakdown of science and engineering majors showed that these majors were chosen almost equally, with 45% selecting engineering and 48% opting for a science field (see Figure 3).

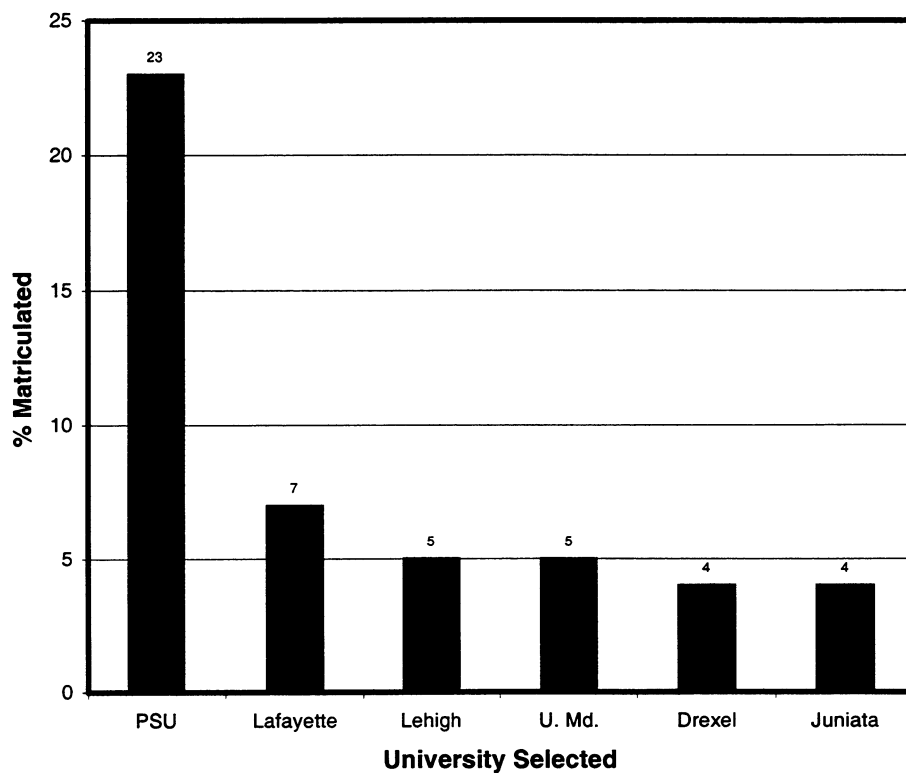
As retention of women in SEM majors is also a critical concern nationally¹, the survey included a question on changing majors. Again, the results were very encouraging. Only 19% of the respondents had changed their majors since entering college. Additionally, of these 19%, almost seventy-five percent selected another SEM major.

The final two questions of the survey were used to gauge the quality of the participants. The first asked if respondents were considering graduate school. Eighty-Five percent responded affirmatively. The second question inquired about whether the respondent had received a scholarship or other funding. Eighty-seven percent answered that they had either received a scholarship or other funding, some fully funded, others partially.

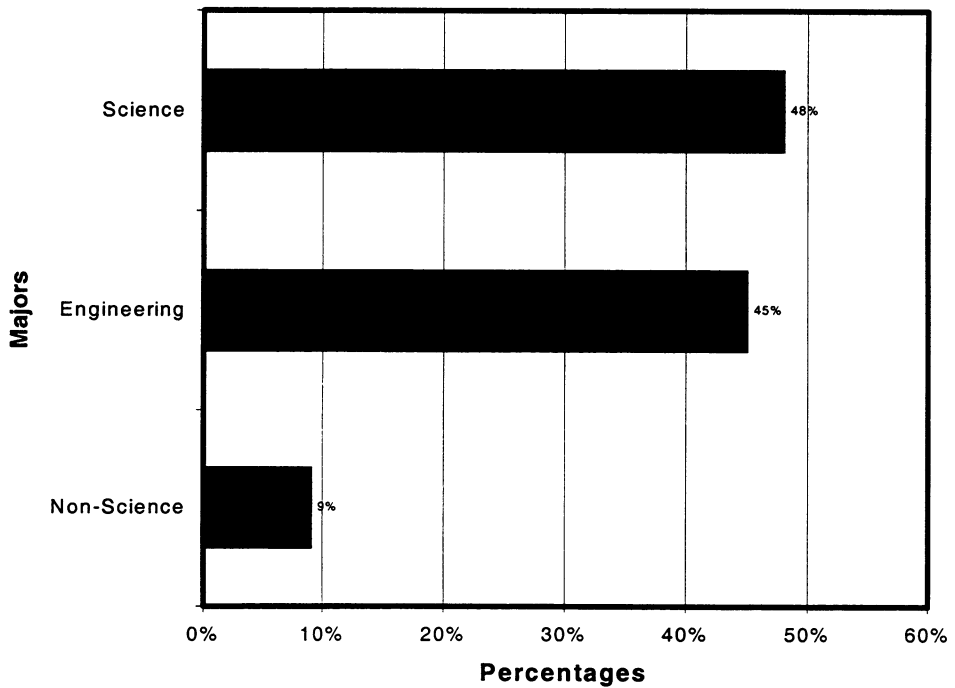
REFERENCES

1. Seymour, Elaine and Nancy M. Hewitt (1997). *Talking About Leaving*. Westview Press, Boulder, CO.

**Figure 2. WISE Week Recruitment
1995-1998**



**Figure 3. WISE Week College Major Selection
1995-1998**



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