# The North Carolina State University Women in Science and Engineering Program: A Community for Living and Learning

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## Abstract

Women are underrepresented in many of the disciplines in engineering, the mathematical sciences, and the physical and natural sciences, both at the undergraduate and the graduate levels. Depending upon the discipline, we lose women at varying points along the way. The pipeline of women interested in studying in engineering disciplines and in physics, for example, narrows considerably at the undergraduate level. In other disciplines such as mathematics, the retention rate for women at major research universities is much lower than at liberal arts institutions and the percentage of women who pursue graduate studies is much lower than that of their male counterparts. To help address these pipeline issues, the North Carolina State University College of Engineering (COE) and the College of Physical and Mathematical Sciences (PAMS), in partnership with University Housing, developed the Women in Science and Engineering (WISE) Village, a living and learning community of female scholars.

This paper describes the process for creating and implementing the WISE Village, the assessment results from the first year of operation of the program and plans for the future.

## Introduction

The challenges of recruiting and retaining females in engineering colleges are well known. Colleges of science and mathematics face these same challenges, although the pipeline in some of these fields may not become as leaky until graduate school. For nearly ten years, the percentage of women in engineering colleges in the U.S. has persisted near the 20% level, although during the past several years some engineering colleges have begun to see a drop. At North Carolina State University (NC State) the percentage of women entering engineering as freshmen has dropped from a high of 23% in 1997 to a low of 16% in 2003. In Physics, the percentage of women in the undergraduate student population is 16%. Over the same period of time the quality of the incoming engineering student and incoming science student has increased. The average engineering student's SAT score increased from 1220 to 1262 and their weighted HSGPA increased from 3.93 to 4.22. Similarly, the SAT and HSGPA for incoming freshmen in PAMS changed from 1235 to 1249 and 3.92 to 4.20, respectively. No significant difference in academic preparation or credentials was seen between the men and women. Over the same six-year period, the nation saw a tremendous increase in demand for computer scientists, computer engineers and computer networking specialists. An economic downturn followed this boom, significantly impacting the economy, especially in North Carolina. Each of these factors has had

an impact on the recruitment of female students in technically-related disciplines. Once at the university, female students' persistence in engineering and the sciences varies. For example, the four-year graduation rate for the 1999 cohort of female students in the physical and mathematical sciences was greater than that of the men, approximately 36% for men and 46% for women. However, the dropout rate is greater for women, approximately 11% for the men and 14% for the women. The four-year graduation rate in engineering and computer science is approximately 18% for both men and women; however, after six years approximately 45% of the women graduate as compared to 52% of the men. The six-year graduation rate for men and women who start in engineering and graduate at NC State with any degree is approximately 68%. These and other factors necessitate that we look at alternative approaches to recruiting and retaining female students.

One alternative approach that can improve student recruitment and retention is the development of residential learning communities. Learning communities are designed specifically to help students successfully navigate the college experience and make meaningful and lasting connections with peers and faculty. For women in science and engineering, whose minority status and feelings of isolation in the classroom may contribute to a lack of academic self-confidence, a learning community composed of female students in similar majors can be an important source of support.

In 2001, North Carolina State University established a Living and Learning Task Force to explore opportunities for strengthening students' academic and residential programs on campus through enhanced partnerships among Student Affairs, University Housing and the academic colleges. The task force reviewed information about living and learning communities, visited programs on three other university campuses, and collected information from students, staff and faculty at NC State. Based on these findings, the task force encouraged the university community to develop living and learning communities in areas of interest to the students. In early 2002, the Colleges of Engineering and Physical and Mathematical Sciences and University Housing began the development of a living and learning community focused on female students in engineering and the physical and mathematical sciences. In mid summer of 2002, a commitment was made to establish the NC State University WISE Village, a living and learning community of female scholars. Freshman women in engineering and the sciences would have the opportunity to live together in a residence hall, along with upper class mentors who would facilitate some of the academic components of the program. A task force composed of representatives from the two academic colleges and University Housing was formed to carry out the program planning and implementation. The planning process for the WISE Village began with the development of a mission statement and program goals.

## WISE Village Mission

The WISE Village is a living and learning community created for freshman female engineers, mathematicians, scientists and statisticians. The program combines a group living experience with resident, upper-class mentors who will assist in the transition to university life. Promoting academic success, fostering the formation of lasting relationships with fellow students, professors and mentors and providing out-of-class experiences are fundamental components of the program. The WISE Village is a supportive environment in which future engineers,

mathematicians, scientists, and statisticians will engage in focused inquiry within their disciplines and begin to develop the skills and talents necessary to become successful professionals.

**WISE Village Goals**

The goals for the program were divided into participant and programmatic categories. Methods for evaluating the achievement of the goals were also defined. Table 1 contains the list of goals and corresponding methods for evaluation.

**Table 1:** Program and participant goals for WISE program

| **WISE Participant Goals** | **Evaluation Methods** |
|---|---|
| Begin to develop an identity as a engineer, mathematician or scientist | Administer Pittsburgh Attitude Survey (Pre- and Post-); Additional customized surveys, concept mapping |
| Meet women with common interests & build lasting friendships | Conduct focus groups semi-annually |
| Increase self awareness through acknowledging personal strengths and weaknesses | Administer gender identity instrument (BEM Sex Role Inventory) Administer Felder's Learning Style Tool |
| Explore career and personal goals | Ongoing through workshops, journaling, concept mapping |
| Develop leadership skills | Administer Skills Leadership Inventory (pre- and post-) |
| Maintain balance between academic and personal life | Utilize calendar tools to plan time; compare actual schedule with plan to adjust as necessary |
| **WISE Programmatic Goals** | **Evaluation Methods** |
| Increase the percentage of freshman women entering the sciences and engineering at NC State | Monitor/evaluate matriculation statistics in engineering, statistics of incoming freshman women in the sciences |
| Increase the retention rates of women in science and engineering | Use as benchmarks cohort data (including a non program control group as well as a program control group) |
| Increase the graduation rate of women in science and engineering | Monitor/evaluate freshman data (compare with benchmarks) |
| Increase the percentage of women in science and engineering who pursue graduate degrees in same or related fields | Monitor/evaluate graduate school application/acceptance data |
| Increase knowledge of career options in science and engineering | Utilize focus groups, career interest surveys and career opportunity workshops |

Each residence hall has a staff of student Resident Advisors who are employees of University Housing and have responsibility for overseeing student life in the residence halls. In addition, the WISE Village has upper class student mentors living in the community. Clearly defined roles and responsibilities are identified for the mentors and Resident Advisors.

**WISE Village Expected Outcomes**

Once the program mission and goals were defined, program and participant outcomes were developed. The *program outcomes* are as follows:

Build a sense of community among the residents.

Provide facilities that accommodate and encourage the diverse personal and programmatic goals of the village, including sufficient space for staff and students.

Provide opportunities for students and faculty to interact outside a formal classroom setting.

Select Resident Advisors who are committed to the goals of the WISE Village and who will work in partnership with WISE mentors to achieve these goals.

Select WISE mentors who will promote the village goals, provide academic and social support to village residents and work in partnership with the Resident Advisors.

Provide opportunities for student-led social, recreational and community service programming.

The *participant learning outcomes* are:

Residents will articulate an appreciation for the community they have created in the village.

Residents who participate in WISE Village sponsored enrichment activities with peers, mentors and faculty will articulate a close connection to the campus.

Residents will demonstrate social responsibility through community service activities.

Residents will articulate an understanding of the issues and problems facing women in the fields of science, mathematics and engineering.

Residents will articulate an understanding of the wide range of career opportunities in academia and industry in the fields of mathematics, science and engineering, including both research and practice.

The defined program mission and goals, along with the program and participant outcomes guided the program planning and implementation.

During Spring 2003 all admitted freshman women in COE and PAMS were invited to participate in the WISE Village. Prospective students were asked to complete an application form, which included information about why they wanted to participate in the program. In parallel with

recruitment efforts, program planning continued. Several key elements were decided on through this process. For the first year, enrollment in the village would be limited to one floor of Lee Hall. Six mentors would be recruited and trained during Spring 2003. The WISE Village would kick off with a bridge program just prior to the start of classes. Students would be clustered in courses to the extent possible and study groups would be established for the core courses in the freshman year. A speaker series would be established and a director for the WISE Village would be hired.

## Program Implementation

The WISE Village living and learning community was launched in Fall 2003 with 56 first year women enrolled in the College of Engineering or the College of Physical and Mathematical Sciences. Students were invited to participate for a two-year period. Since there were more available slots the first year than applicants, all eligible were admitted. For 2004-2005, we anticipate more applicants than slots. Criteria that will be used in the selection process will include equity in acceptance among participating colleges, diversity demographics, high school performance and student essays.

Prior to the start of classes, the women attended a bridge program on campus where they began to build their community and learn about the NCSU computing environment and other resources. The bridge program was designed based on feedback from focus groups of Fall 2002 freshman women. These women indicated that one of the most difficult parts of their high school to college transition was adjusting to the intensive use of computers in and out of the classroom. The bridge program included learning to use the NCSU computing environment, cyber etiquette, and communicating with computers. The bridge program also began to lay the groundwork for each individual's development of her identity as a scientist/engineer. A schedule for the bridge program is contained in the Appendix.

Through clustering in courses, women in the WISE Village have the opportunity to take core mathematics, chemistry, physics and English classes with other students in the program. The WISE women are encouraged to participate in guided study groups in the core mathematics, physics, programming, chemistry and English classes in their residence hall. The WISE mentors lead these study groups. The courses targeted for this type of instruction are those that have been statistically shown to be discouraging to female students or courses that our students have themselves identified as a reason for transferring out of an engineering, mathematics or science department. Statistics have been kept for several years on these courses, and an extensive study of the female freshman experience is underway in the College of Engineering [1].

Participants, as well as all students in the sciences and engineering, have the opportunity to talk with female engineers and scientists working in the Research Triangle Park, neighboring universities and from around the country through the WISE Women Speakers Series. Our first speaker was Christine Hemrick, an alumna of the College of Physical and Mathematical Sciences and current Vice President for Technology Policy and Consulting Engineering for Cisco Systems in San Jose, California. The second speaker featured Suzanne Gordon, alumna of the College of Physical and Mathematical Sciences and current Chief Information Officer and Vice President of the Information Systems Division for SAS Institute. Another program featured a panel of female

university engineering, mathematics and science faculty discussing career growth and management as well as balancing their personal and professional lives. Through panels such as these, student participants are exposed to the idea of research careers in academia, as well as a broad spectrum of ways to practically apply their profession. The WISE director plans topics for presentation with input from the program participants. The goal of this series is not only to inform, but to begin to create an understanding of networking and issues and decisions that will affect these students throughout their careers, without being discouraging. We expect that some of these presentations will result in continued interaction between WISE students and presenters in informal mentoring relationships.

The WISE women have the opportunity to take part in K-12 outreach efforts coordinated by the colleges and to help the colleges develop new K-12 initiatives such as the establishment of WISE clubs at selected area high schools. The colleges have a history of involving female students in outreach efforts, thus benefiting all participants. Female college students have been shown to experience increased self-esteem and increased understanding of engineering, mathematics, and science subjects through having served as role models relating complex subjects to an adoring audience of K-12 students [2]. The K-12 students see female authorities in these subject areas, and the college students form a clearer image of themselves as a scientist or engineer, a major requirement for successful student retention. Outreach activities during the first semester included service learning days at local elementary, middle and high schools, during which the WISE students helped teachers set up labs, catalogue materials, complete administrative tasks, and in one case, participate in a 'bug hunt' with a biology class. A WISE staff member who was team teaching an Introduction to Engineering survey course at a local magnet high school was accompanied regularly by WISE science, engineering and mathematics students. In addition to helping to facilitate activities, the students were placed in the role of an informal 'expert' with whom the high school students were very comfortable asking questions, resulting in a mutually beneficial interaction. WISE students also participated in campus tours for K-12 students and the annual university open house.

Women in the WISE Village receive information on research opportunities at NC State and around the country and are encouraged to pursue those opportunities. A key component of the WISE program is to encourage and assist WISE students to participate in undergraduate research with the goal that many of them may choose to pursue graduate degrees and eventual careers in academia or research.

Social and emotional support is a key component of the WISE Village. While academic support opportunities are well communicated throughout the university, anecdotal information from within our community indicated a large need on the students' part to feel as if they are part of a larger group with similar stresses, expectations and opportunities. To address that need, social events were planned by the WISE director and the WISE mentor team. The WISE women held informal 'cookie nights', 'movie nights', etc., throughout the semester. One of the mentors organized a group trip to the State Fair while others solicited participants for block seating at university athletic events. The most popular event was the weekly WISE Wednesday study break, held in the office suite with refreshments. Some participants took advantage of both the need for food and their own need for stress relief by making the refreshments for the break. In conjunction with the hall's Resident Advisors, WISE women also participated in a Halloween

decorating contest, Bring a Bowl Fellowship Nights, Opera Concert, Thanksgiving dinner, and Fitness Week.

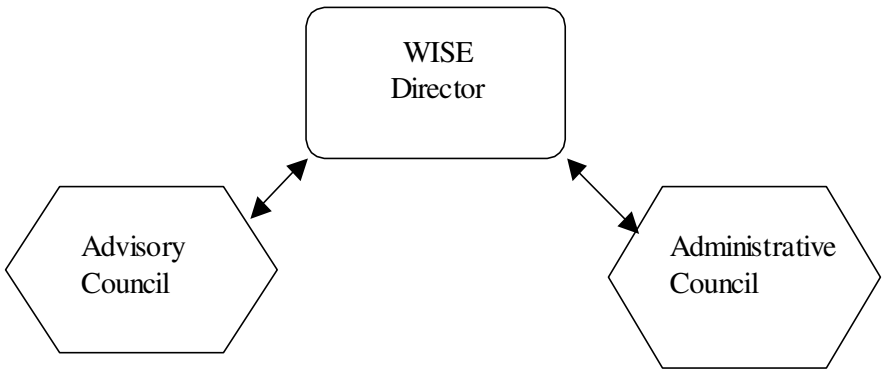
Parental support is key to the success of incoming freshmen. To facilitate that, the program began the orientation weekend with an ice cream social for the participants, their families, mentors and staff. This informal event, during which the NCSU chancellor visited, was a prime opportunity to reassure parents about the move to university life. Mid-semester, during parents' weekend, WISE staff and mentors invited parents to a lasagna dinner, again facilitating interaction with the staff and other families. Both events were very well attended, and feedback has spurred the creation of a parent list serve to keep parents informed of WISE community activities.

During bi-weekly one-on-one sessions between the mentors and the Director, each mentor's mentees were discussed and updates were given. The Director had lunch weekly with two student volunteer representatives to gather a broad view of happenings within the community. Each week, the Director made contact via email or phone with random participants, to 'check in' with them. This interaction, as well as the social support, helped lay the foundation for the building of community necessary for the program's success.

## Administrative Structure

As the WISE program matures, the administrative structure will also evolve. In its infancy, the program was developed and administered by a committee of interested representatives from each participating college and University Housing. This committee structure, although necessary during the formative stages, would become cumbersome in the long term. A WISE director is now in place, and the formation of the administrative structure is evolving into the following.

**Figure 1:** WISE Administrative Structure



*WISE Director*

Early on the planning committee came to the conclusion that a permanent director was needed for the program. The director would have overall responsibility for the WISE Village including program implementation, administration, budget management, and student recruitment. The director is required to have a bachelor's degree, with Masters or Ph.D. preferred and science or engineering background preferred. The director is required to have experience in program administration and higher education and preferably experience with student mentoring and K-12 outreach. The position is a 12-month position. The duties of the WISE Director include the following.

Reports to the Administrative Council and is supervised by the Chair of the Administrative Council
Has broad responsibilities for each of the following:

- Academic components
  - Organization of the guided study groups
  - Selection, supervision and training of guided study group facilitators (in conjunction with University Housing and colleges)
  - Oversight of advising events
  - Development of research components as appropriate
- Programmatic components
  - Organization and development of the Summer Bridge Program
  - Coordination of the Speakers Series
  - Organization of educational activities (such as workshops on applying to graduate school, applying for summer internships, study abroad opportunities, etc.)
  - Development of information for participants (information on internships, research opportunities, etc.)
  - Coordination of social events such as the Fall and/or Spring picnic
  - Coordination of off campus trips as appropriate
- Administrative components
  - Maintenance of budget (in coordination with the colleges and University Housing)
  - Selection and supervision of peer mentors
  - Oversight of the participant selection process
  - Maintenance of website and development of material used for advertisements, for internal activities such as Open House, etc. (in conjunction with the colleges and University Housing)
  - Development of proposals for external funding (in conjunction with the WISE Advisory and Administrative Councils)
  - Coordination of program assessment
- K-12 Outreach
  - Coordination of WISE outreach activities (such as the establishment of WISE High School chapters)
  - Assist COE Director of Women in Engineering and Outreach Programs with K-12 outreach activities

*WISE Advisory Council*

*Members:* WISE Director, chair of the WISE Administrative Council, faculty and staff (at least one) from each college, representative(s) from University Housing, current students, President of the WISE student body, one representative from The Science House, one representative from the College of Engineering K-12 Outreach Program, one representative from each of the K-12 Outreach Programs in Colleges of Agriculture and Life Sciences and Natural Resources, scientists and engineers from the Research Triangle Park and other external advisors
Members serve terms up to three years and are selected by the WISE Director in consultation with the colleges and University Housing
Chaired by the WISE Director
Meets at least once a semester, more often in the initial stages of the program
*Responsibilities:* to provide general advice to Director on routine operation of program

- Academic components such as the guided study groups
- Programmatic components such as the identification of speakers for the Speakers Series, advice on the schedule and key elements in the Summer Bridge Program, the development of a book club series, etc.
- Set outcomes and provide guidance on assessment
- Operational advice (for example, growth, residence hall space allocation, etc.)

Faculty will serve as informal advisors for the students

*WISE Administrative Council*

*Members:* WISE Director, one representative from each college and from University Housing
Members are selected by the individual units
Terms are unlimited
Chaired by a member on the committee from a participating unit; the chair will serve a three year term and the position will rotate among the participating units
Meets at least once a semester
*Responsibilities*

- Broad oversight of the WISE Program
  - Future directions of the program
  - Budgetary matters
  - Long term growth
  - Advises Director on the selection and the responsibilities of the Peer Mentors
  - Determines the proportion of RAs and mentors representing each college
  - Advises the Director on the selection of student participants and make-up of the residence hall (for example, will one floor be restricted to new freshmen only?)
- Liaison between the program and the University community
  - "Public face" to the University
  - Request funding from the University
- Identification of external funding opportunities

**Program Funding**

The Colleges of Engineering and Physical and Mathematical Sciences and University Housing provided start-up funding for the WISE program, along with a one-time grant from the Office of Diversity and African American Affairs to purchase computers. The first year expenditures include:

| | |
|---|---|
| WISE Interim Co-Directors | $18,000 |
| WISE Director (half-time for half year) | $19,000 |
| WISE Peer Mentors (6 at $2,100) | $12,600 |
| Programmatic support | $ 3,000 |
| Office equipment (computers, printer, etc.) | $10,000 |
| Office supplies | $ 2,000 |
| Office rent in University Housing | $27,000 |

The participating colleges have made a proposal to the Provost's Office for continuing support of the program. It is anticipated that in addition to any support provided by the Provost's Office, all participating colleges/units will continue to provide some support for the program, along with funds generated from external sources. For example, the WISE Program recently received a gift of $18,000 from the Alcoa Foundation. The budget to support a steady-state contingent of 200 students is anticipated to be as follows:

| | | |
|---|---|---|
| WISE Director (half-time) | | $ 37,500 |
| Administrative assistant, half-time | | $ 19,000 |
| WISE Peer Mentors (18 at $2,500) | | $ 45,000 |
| Graduate student – assessment | | $ 13,000 |
| Programmatic support | | $ 8,000 |
| Office support | | $ 15,000 |
| Office rent in University Housing | | $ 27,000 |
| | Total | $164,500 |

**Assessment**

The assessment plan for the WISE program includes both formative and summative elements. Many of the instruments are described in Table 1. Each program or personal goal will be assessed through one or more avenues. A summary of the instruments to be used for summative assessment is given below.

*Pittsburgh Attitude Survey:* The Pittsburgh Attitude Survey is a standardized instrument based on questions using a Lickert scale designed to measure student attitudes and confidence levels with regards to engineering. This survey has been used at the beginning and end of the first semester for engineering students at NC State for 8 years. Previous results from this survey yielded results such as our female engineering students losing confidence in their physics abilities during their first semester, despite the fact that they do not take physics until their second semester [3].

*Concept mapping:* Concept mapping is a technique for organizing information, frequently about complex topics. It is used as a means of assessing the depth of understanding that a student possesses about a topic [4], [5]. The WISE participants were trained in a concept mapping exercise at the beginning of their first semester. During this training the students answered two questions: what makes a good college student and what makes a good engineer/scientist. The participants will answer these same, and possibly additional, questions in a follow-up session during their second semester. Control groups were also identified and trained in their first semester. The data from the WISE women will be compared with data from the control groups of women not in WISE and men.

*Other surveys:* The College of Engineering is currently in the midst of a longitudinal survey about the college experience of women versus men. A variation of the instrument being used in this survey has also been given to the WISE participants, and results will be compared with the broader student population. In addition, standardized instruments such as Felder's learning styles assessment [6], the BEM sex role inventory [7], and a leadership skills inventory will be administered. These instruments were not ready to administer during the first semester of the WISE program, but they are expected to become part of the regular assessment regimen. In addition, WISE participants will complete the National Study of Living Learning Programs along with other campus residents. Results from this instrument will address community-learning outcomes.

*Focus groups:* Focus groups with WISE students, WISE mentors, other non-WISE female students and male students will be conducted regularly to discuss experiences and opinions that are not easily measured by standardized tests.

Formative assessment will include information collected by the WISE director at weekly mentor meetings (both as a group and one-on-one), study group attendance data and mentor contact sheets that the mentors complete regularly concerning their contact with their mentees. Grade and persistence data will also be used.

Preliminary data from the entering class of WISE women are given below. Data is provided for 53 of the 56 students enrolled in COE and PAMS. Three of the participants are from the Colleges of Natural Resources and Textiles. Tables 2-7 present the qualifications and first semester performance of the WISE women as they compare to the 2003 freshman class in COE and PAMS and the freshman women in COE and PAMS. Students participating in the WISE program are very similar to their peers. Their SAT average is slightly lower, but their HSGPA is slightly higher. First semester performance was comparable to their female peers. Table 8 shows the number of students on academic warning after the first semester. On average there is a slightly higher percentage of WISE women on academic warning, but given the program numbers are small, this may not be significant.

Extensive assessment of the program and student performance is underway. Results of the ongoing programmatic assessment are being used for program improvement for Year 2. End of year evaluation of the data will be performed and the results will be used to make further

program improvements. Some of the assessment is longitudinal, so impact of these studies will not be fully seen for several years.

**Table 2:** Qualifications and first semester performance of all COE freshmen

| Fall 2003 All COE Freshmen | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **N** | **Mean** | **Max** | **Min** | **25th Percentile** | **75th Percentile** |
| **Sat total** | 1075 | 1262 | 1600 | 920 | 1180 | 1340 |
| **HS GPA** | 1141 | 4.22 | 5.00 | 3.34 | 3.96 | 4.47 |
| **HS PCTL** | 1044 | 88.2 | 99.0 | 45.0 | 83.0 | 95.0 |
| **First Semester GPA** | 1123 | 3.07 | 4.00 | 0.00 | 2.60 | 3.69 |

**Table 3:** Qualifications and first semester performance of all PAMS freshmen

| Fall 2003 All PAMS Freshmen | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **N** | **Mean** | **Max** | **Min** | **25th Percentile** | **75th Percentile** |
| **Sat total** | 161 | 1251 | 1570 | 900 | 1170 | 1330 |
| **HS GPA** | 170 | 4.20 | 5.25 | 3.37 | 3.91 | 4.50 |
| **HS PCTL** | 152 | 86.84 | 99 | 32 | 81 | 96 |
| **First Semester GPA** | 171 | 3.08 | 4.0 | 0.43 | 2.64 | 3.67 |

**Table 4:** Qualifications and first semester performance of all COE freshman women

| Fall 2003 COE Incoming Freshman Women | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **N** | **Mean** | **Max** | **Min** | **25th Percentile** | **75th Percentile** |
| **Sat total** | 165 | 1237 | 1570 | 920 | 1150 | 1310 |
| **HS GPA** | 184 | 4.32 | 5.00 | 3.47 | 4.05 | 4.59 |
| **HS PCTL** | 170 | 90.2 | 99.0 | 66.0 | 87.0 | 97.0 |
| **First Semester GPA** | 179 | 3.21 | 4.00 | 0.69 | 2.80 | 3.80 |

**Table 5:** Qualifications and first semester performance of all PAMS freshman women

| Fall 2003 PAMS Incoming Freshman Women | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **N** | **Mean** | **Max** | **Min** | **25th Percentile** | **75th Percentile** |
| **Sat total** | 59 | 1211 | 1570 | 900 | 1130 | 1290 |
| **HS GPA** | 64 | 4.25 | 5.0 | 3.37 | 3.98 | 4.54 |
| **HS PCTL** | 56 | 88.7 | 99 | 56 | 81.5 | 97.0 |
| **First Semester GPA** | 65 | 3.05 | 4.0 | 1.09 | 2.59 | 3.67 |

**Table 6:** Qualifications and first semester performance of COE WISE participants

| Fall 2003 COE WISE Participants | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **N** | **Mean** | **Max** | **Min** | **25th Percentile** | **75th Percentile** |
| **Sat total** | 29 | 1181 | 1350 | 1050 | 1110 | 1240 |
| **HS GPA** | 35 | 4.27 | 4.98 | 3.65 | 4.01 | 4.47 |
| **HS PCTL** | 31 | 91.13 | 99.0 | 77.0 | 88.0 | 96.0 |
| **First Semester GPA** | 33 | 3.24 | 4.00 | 0.96 | 2.95 | 3.87 |

**Table 7:** Qualifications and first semester performance of PAMS WISE participants

| Fall 2003 PAMS WISE Participants | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **N** | **Mean** | **Max** | **Min** | **25th Percentile** | **75th Percentile** |
| **Sat total** | 13 | 1181 | 1540 | 1010 | 1070 | 1270 |
| **HS GPA** | 16 | 4.11 | 4.82 | 3.37 | 3.90 | 4.38 |
| **HS PCTL** | 16 | 83.63 | 99.0 | 60.0 | 77.5 | 94.5 |
| **First Semester GPA** | 17 | 3.00 | 4.00 | 1.67 | 2.59 | 3.47 |

**Table 8:** Qualifications and first semester performance of All WISE participants

| Fall 2003 All WISE Participants | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **N** | **Mean** | **Max** | **Min** | **25th Percentile** | **75th Percentile** |
| **Sat total** | 45 | 1185 | 1540 | 1010 | 1110 | 1260 |
| **HS GPA** | 55 | 4.24 | 4.98 | 3.37 | 4.00 | 4.46 |
| **HS PCTL** | 51 | 89.0 | 99.0 | 60.0 | 82.0 | 96.0 |
| **First Semester GPA** | 53 | 3.18 | 4.00 | 0.96 | 2.80 | 3.85 |

**Table 9:** Students on Academic Warning in Spring 2004

| Number of Students on Academic Warning in Spring 2004 | | | |
|---|---|---|---|
| | **Frequency/Percent** | | **Frequency/Percent** |
| Of all 1147 COE incoming freshmen | 106/9.2% | Of all 177 PAMS incoming freshmen | 18/10.2% |
| Of all 185 COE freshman women | 11/5.9% | Of all 65 PAMS freshman women | 7/10.8% |
| Of all 35 COE WISE participants | 4/11.4% | Of all 17 PAMS WISE participants | 2/11.8% |
| Of all 56 WISE participants | 6/10.7% | | |

## Summary

The North Carolina State University WISE Program is off to an excellent start. The program started its first year with 56 students primarily from the Colleges of Engineering and Physical and Mathematical Sciences. The planning committee with assistance from two interim co-directors designed and implemented the program. A permanent director was hired in January 2004. Program assessment is underway. Year 2 plans are underway to include both first and second year students and to include freshman women in the Colleges of Agriculture and Life Sciences and Natural Resources. Eventually, we anticipate approximately 200 women living in our community.

## References

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**Appendix:** Summer Bridge Program

| **Summer Bridge Orientation Weekend** | | |
|---|---|---|
| **Day/Date** | **Time** | **Topic/Session** |
| | | |
| **Thurs, 8/14** | 7:00 - 8:00 PM | **Ice Cream Social –** ***Students and parents*** |
| | | |
| **Fri, 8/15** | 8:30 – 9:00 AM | **Breakfast** |
| | 9:00 - 9:30 AM | **Transport residents to off-campus retreat location** |
| | 9:30 – 10:30 AM | **Welcome and Introductions -** What is WISE? Pre-survey |
| | 10:30 – 11:30 AM | **What to expect this first semester?** You're not alone! Transition from home to college & small group gallery walk activity about fears, anticipation, goals |
| | 11:30 – 12:15 PM | **Team Building** - Junkyard wars |
| | 12:15 – 1:00 PM | **Lunch -** Gourmet sandwich bar |
| | 2:00 – 2:45 PM | **Team Building** - Competition phase and wrap up |
| | 2:45 – 3:00 PM | **Break** |
| | 3:00 – 3:45 PM | **Organization** - Study skills/Note taking (introduce Cornell method), Calendar skills |
| | 3:45 – 4:30 PM | **Program Ideas and Expectations -** Brainstorming exercise |
| | 4:30 – 4:45 PM | **Wrap up/Reflection/Saturday agenda** |
| | 4:45 – 5:15 PM | **Transport residents to Lee Hall** |
| | 6:00 PM | **Meet your mentor to discuss dinner options** |
| | | |
| **Sat, 8/16** | 8:30 - 9:15 AM | **Breakfast with Mentors** |
| | 10:00 - 12:00 PM | **Introduction to technology tools** Excel, Power Point, Access, Publisher, etc. including using the computer on campus resources, policies, etc. |
| | 12:00 - 1:00 PM | **Lunch** |
| | 1:00 - 2:30 PM | **Physical Campus scavenger hunt** |
| | 2:30 – 4:00 PM | **Expectations of Program Participants, election of student representative to advisory board** |
| | 4:00 – 4:30 PM | **Reflection and Wrap-up** |
| | | |
| **Sun, 8/17** | 1:00 - 3:30 PM | **MAPLE** |
| | 3:45 - 5:00 PM | **High tea and Final Wrap-Up** |