

WISE UNDERGRADUATE & K-12 PROGRAMS

The **WISE Undergraduate Peer Mentoring Program**, the oldest, continuously-offered mentoring program at the University of Iowa (pilot, spring 1995), provides academic and social support for approximately 200 undergraduate women in science, technology, engineering, and math (STEM) disciplines each year. Women who enter this program as incoming first-year students are retained in STEM majors through their fourth year of college at approximately twice the national average. The effectiveness of this program is also evidenced by the retention of participants after the first year: for 2006-07, 54% of mentors (volunteer) had been mentees during their first-year at the UI with 33% of mentors serving for a second or third year. Over the life of the Peer Mentoring program, WISE has provided academic and social support to 506 women in the College of Engineering and 1694 women in the College of Liberal Arts & Sciences

The **WISE Learning Community (LC)**, the first academic learning community at the University of Iowa (1996-97), provides residential based community-building programs and academic and social support to 85 undergraduate women in science, technology, engineering, and math (STEM) disciplines each year. Over the life of the WISE Learning Community, WISE has provided academic and social support, to 498 first-year women in STEM (40-50% from the College of Engineering, depending on year) and 102 second-year women in STEM the College of Liberal Arts & Sciences (average 50%/50% split between the College of Engineering and the College of Liberal Arts & Sciences)

The **WISE Learning Community Outreach Program** provides an opportunity for LC women to stay connected to their home schools (K-12) and extend their college experiences by 'giving back'. They develop and deliver a presentation to high school students; sharing their knowledge of the college transition, acting as role-models for younger women and men, and encouraging them to stay in math and science throughout high school to keep their educational and career options open. Successful university students who are known to younger students and come from the same geographic background are very powerful role-models for those coming up behind them.

The **WISE Tutoring Program**, a residence hall-based program, offers tutoring for difficult first- and second-year math, science, and engineering courses, at no charge, to approximately 300 undergraduate women in STEM majors each year. Easily accessible support, in a known environment, helps to overcome the stereotype threat underrepresented students often face when accessing support in a more academically-visible setting.

The **WISE Ambassadors**, a student organization made up of graduate and undergraduate women in STEM disciplines provide outreach to area K-12 institutions and the broader community. They host on-campus programs such as WISE Badge Day for area Girls Scouts, serve as speakers at career exploration events, assist K-12 educators in their classrooms, and serve as judges for area science and engineering fairs.

The holdings of the **WISE Resource Library** include academic journals, such as *The Journal of Women and Minorities in Science & Engineering*, *Computers in Education*, and the *Journal of Engineering Education*; magazines such as *eSchool*, and *Diversity*; curricular materials with teacher manuals; and a growing number of books related to first-year transition, attribution theory, mentoring, career exploration, negotiation skills, dual career families and work-life balance. Also available is a collection of materials whose primary focus is to outline hands-on science, math, and engineering projects for K-8 students. The activities cover diverse scientific areas with experiments appropriate for different ages. The WISE Resource Library currently has over 600 holdings, *77% of which can not be found in any other UI library*.

The **WISE Media Library** contains over 130 DVD's/CD's/VHS tapes of programs with science, math, technology and engineering themes for use in regional 8-12 classrooms. Many come from series such as *NOVA*, *National Geographic*, *The American Experience*, *Frontline*, *Scientific American Frontiers*, and *Discovering Women*. We strongly encourage public school teachers to access these materials to supplement their activities in the classroom. Additionally, the resource and media libraries will be searchable via the WISE website by the start of the 2007-08 academic year.

The **WISE K-12 Library Project** donates role-modeling books (about women engineers, scientists, mathematicians, etc.) and other materials supporting gender equity in math and science, to area schools during Women's History Month. Role modeling books enable girls to read about women in positions of excellence so that they, in turn, will set high expectations for themselves. It is also important for boys to see women in positions of excellence in fields where they have been historically under-represented to help negate the gender stereotyping of jobs and careers. Additionally, WISE provides an opportunity for UI alumnae to purchase, through WISE, a set of gender-equitable books that are donated to the Iowa school of their choice, in their name. The goal of this project is to distribute gender books and materials to all public school district libraries in the state of Iowa.

Each year **WISE co-sponsors events** such as the *Write Women into History Essay Contest* (with the Iowa Council on the Status of Women), *Sonia Kovalevsky Day* (with the UI Math Department), *Hawkeye Challenge Programming Contest* (with the UI Computer Science Department and ACM) and other programs directly impacting K-12 students.

WISE GRAD/POSTDOC PROGRAMS

In August of 2005, WISE developed the *WISE Post Doc Initiative* to raise awareness of postdoc issues on campus and to become a catalyst for getting postdoc issues on the institutional 'table'. WISE joined the National Postdoc Association (NPA) for two years, held focus groups with postdocs across campus (male and female) and prepared a report that was given to John Keller, Dean of the Graduate College. We also brought Chris Golde, principal researcher on the Carnegie Study on the Doctorate, to the UI as a visiting scholar and workshop presenter. As a result of our advocacy, Dean Keller tapped a member of the WISE Board to work in the Grad College addressing issues of postdocs and minority grad students. WISE received mention in an article published in *The Scientist* early this spring; touting greatly increased satisfaction rates reported by UI postdocs (we jumped 27 places to take fifth place!)

Designed for female post-comp Ph.D. candidates and post doctoral fellows in science, technology, engineering, and math (STEM), the *WISE Professional Development Workshop Series* provides access to information and faculty/staff expertise at the precise time in their careers when the skills being taught can be used to address specific and immediate needs. Workshops consist of two separate sessions, with practical application 'homework' assigned for the interim. Workshops are well attended and receive high marks for providing important information in a hands-on setting. Workshops are facilitated by UI faculty and staff and are offered on a rotating basis.

The *Dr. Eunice Beam Travel Grant Program*, endowed in 2001, competitively awards six \$250 travel grants per year to doctoral women in STEM disciplines who are making oral presentations at meetings significant to their continued academic success. This program has provided travel support for 72 doctoral students in the Colleges of Engineering, Liberal Arts & Sciences, Public Health, Medicine, Pharmacy, Dentistry, Nursing, Education, and the Graduate College.

WISE RESEARCH

The *WISE Visual/Spatial Study* of entering first-year students in the UI College of Engineering was developed to assess the relative skill levels of males and females involved in tasks of mental rotation, a facility considered to be a strong indicator of success in certain fields of engineering, physics and computer science. In January, 2007 we completed five years of baseline data collection and what we see in our UI population unfortunately mirrors the current literature: females enter the UI College of Engineering with statistically higher GPA's than their male counterparts, but exhibit significantly less well developed visual/spatial/rotational skills ($p=0.0004$). With two-year funding from the National Science Foundation to pilot a training program to increase facility with tasks of mental rotation for students at risk, we secondarily hope to use the results of the pilot to develop a separate initiative focused on K-12 teachers: educating them about the need to incorporate visual/spatial skills development into the math and science curriculum; holding workshops on the use of established training protocols for district math and science coordinators (train the trainer model), and providing technical support for teacher in-service training across the state on the importance of and mechanisms for integrating visual/spatial skill building exercises into daily classroom activities.

Former peer mentors who were at least one year post graduation at the time this study commenced (summer of 2006, $n=480$), were invited to take part in the *WISE Former Mentor Survey*. This survey was developed to identify major influences (positive and negative) that had significant impact on career decisions made by these young women related to retention/attrition in their originally intended science, technology, engineering, or math (STEM) fields. The survey also contained a series of questions asking if the respondents had stayed in Iowa after graduation, whether they were able to find work in Iowa that matched their education and skills, and whether they would consider returning to Iowa (if not currently residing here) if appropriate employment became available. All issues of importance to the economic development of the state. Data analysis is ongoing, with a report scheduled for publication and distribution the spring of 2008.

The *Graduate Programs Climate Study*, initiated in 2001 by the Women in Science and Engineering (WISE) Program and co-sponsored by the Graduate College, represented a commitment to identify strengths and weaknesses of graduate education at The University of Iowa in order to provide the highest quality education. The survey asked for information about issues that have been raised by graduate students, faculty, and administrators as important to the timely and successful matriculation of all graduate students, regardless of gender, ethnicity, sexual orientation, or other variables that may impact support within their degree-granting programs. The seven sections of the survey reflect these areas of interest: background information; employment information; academic information; mentors; student perception of faculty support; graduate student retention; and, student perception of sexual harassment on campus. This report focuses on the doctoral student experience. Eight hundred and fifty six (856) surveys were completed and returned resulting in a 43.4% response rate. The Executive Summary and full study report are available on the wise website: <http://www.uiowa.edu/~wise>.

A Few Kudos

Message from the parent of a former WISE participant:

Laurel really appreciated your WISE program. Because of her association/dorm life with WISE women, she received invaluable support and made quality friendships. KUDOS to all involved in this wonderful program and thanks for the extra effort required to maintain it. As a parent with a daughter who was very serious about her education, I was reassured that her first-year experience at the U of I would be more positive due to her inclusion in the WISE program; I am pleased that my 'trust' was legitimate.

Message from a former WISE student:

I am not sure if you track all of us eternally grateful former students, but I am a 1997 graduate of University of Iowa, Chemical Engineering, and I just wanted to let you know that I am finishing up my Ph.D. early this summer at Penn State and will be starting work this summer as an analyst in a federally funded research and development center in the D.C. Metro area. Thank you for all you did for me during the time I was at Iowa – I know that this achievement in my life wouldn't be possible without the support and lessons I learned as an undergraduate.

Quote from an engineering student:

WISE has opened many doors for me. I obtained my first internship through WISE, and obtained my second internship largely because of my first internship. The research I have done in my internships will be incorporated into life-saving devices and medicines. I look forward to opportunities to help other women in science as WISE has helped me. Thanks you for your support. Please feel free to contact me in you have any questions about WISE activities.

Quote from a microbiology/computer science student:

I've participated in several mentoring programs in my time as an undergraduate. I've found the WISE program to be the most efficient and effective. I've learned much and hope I've been able to contribute as well.

Message from a former student:

My first year as a student at Iowa I was a mentee and this program was such a positive experience for me that I decided to become a mentor to help other young girls in my position. Four years later, I am still a mentor and have enjoyed every moment! My 5 full years here at Iowa have been very successful and I attribute some of that success to the support I received through the WISE Program. I am thrilled that a program like this exists for girls entering the science and engineering fields and I wish you all much continued success in the future.

WISE UNDERGRADUATE PROGRAMS

WISE Undergraduate Peer Mentoring Program

The oldest, continuously-offered mentoring program at the University of Iowa (pilot, spring 1995)

Measures of program success:

- Retention of first-year participants in STEM majors through their fourth-year at the UI is significantly higher than the national average (doubled). Additional information attached.
- In 2006-07:
 - 54% of mentors (volunteer) had also been mentees during their first-year at the UI.
 - 33% of mentors were serving for a second or third year.
- Even with the initiation of fees in 2002-2003, there has been a wait list for this program every year.
- A majority of undergraduate women engineering students at the UI who participated in the national, multi-site WECE study (Women's Experiences in Colleges of Engineering [WECE] study 2003) reported that their mentoring experiences (as a mentee and a mentor) as well as their study support and career counseling came through the UI WISE program, not their academic college or a professional organization.
- Former mentors responded to a WISE follow-up survey in large numbers! With a response rate of 66% (318 returned out of 480 mailed) we hope to gain insight into the career trajectories of these women and identify supports and impediments to their continued success. Data analysis will begin early this summer.

NOTE: Over the life of the Peer Mentoring program, WISE has, without cost to the Colleges receiving the benefit of our services, provided academic and social support to

- 506 women in the College of Engineering
- 1694 women in the College of Liberal Arts & Sciences

WISE Learning Community

The first academic learning community at the University of Iowa (1996-97 academic year)

The first academic learning community allowed to retain second- and now, third-year students

Measures of program success:

- Community building activities developed for use in the WISE Learning Community are considered 'Best Practice' and have been replicated or revised for use in other UI Learning Communities.
- Now one of 12 Learning Communities at the UI, the WISE LC has been recognized as the 'best' LC for two of the last five years.
- First-year WISE LC residents (55-60 per year) participate in the LC Outreach program – delivering at least one presentation/discussion to students in their home schools. Successful women in STEM who have come from, and return to, their home communities are powerful role-models for younger students.

NOTE: Over the life of the WISE Learning Community, WISE has, without cost to the Colleges receiving the benefit of our services, provided academic and social support to:

- 498 first-year women in STEM (40-50% from the College of Engineering, depending on year)
- 102 second-year women in STEM the College of Liberal Arts & Sciences (average 50%/50% split between the College of Engineering and the College of Liberal Arts & Sciences)

NOTE: *Between the peer mentoring program and the learning community, WISE provides direct academic and social support to, on average, two-thirds of all incoming first-year women in the College of Engineering.*

WISE Ambassadors

The *WISE Ambassadors*, a student organization made up of graduate and undergraduate women in STEM disciplines provide outreach to area K-12 institutions and the broader community. They host on-campus programs such as WISE Badge Day for area Girls Scouts, serve as speakers at career exploration events, assist K-12 educators in their classrooms, and serve as judges for area science and engineering fairs.