

An initiative to enhance enrollment and retention of students in NAU's Engineering & Professional Programs

Fall 2005

The Engineering Talent Pipeline (ETP) is one of nine projects funded by the William and Flora Hewlett Foundation under the Engineering Schools of the West Initiative. <http://eswi.hewlett.org/>

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Hewlett Foundation/NAU Engineering Talent Pipeline

Working News

The Pipeline

The *Working News* brings you regular updates of activities sponsored by the Hewlett Foundation/NAU Engineering Talent Pipeline (ETP). If you're interested in recruitment and retention of women and underrepresented minorities to math, science, engineering, computer science, and construction management, we encourage you to read on and stay in touch.

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NAU Opens World of Engineering to Teenage Girls

1st STEP UP Camp

LEGOS robots, model airplanes and mousetraps posed some engineering challenges for the 25 girls attending NAU's first STEP UP engineering summer camp. The week-long residential camp allowed the girls to explore engineering, computer science, and construction management through hands-on activities led by NAU faculty, students and industry

professionals from Siemens, Boeing, U.S. Geological Survey's Astrogeology Research Project, NAU's Indigenous Community Enterprises, and the Society of Women Engineers.

The girls had the opportunity to work in teams with LEGOS robotics kits to build and program robots to do their bidding. The robots were featured in a design showcase for families and visitors on the last day of camp.

Young women came to STEP UP from Arizona, Utah, New Mexico and as far as Boston. They loved the all-girl camp format and came away with a far better understanding of what engineers do and what it takes to become one.

Not only do engineering camps expose young people to engineering, they are also very effective recruiting pathways. Similar camps in other parts of the country have shown phenomenal response with one-third to half of the camps' participants eventually enrolling in the sponsoring university.

STEP UP is an ETP-sponsored collaboration between NAU's Educational Talent Search, the College of Engineering and Natural Science's Multicultural Engineering Program and industry, agency and institutional partners. We encourage new partners to join us to ensure a vital, sustainable program over the long term.



One of the 5 STEP UP design teams with their finished robot.

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More info: 928-523-2087, STEPUP@cens.nau.edu or <http://www.cet.nau.edu/Student/MEP/MEP-StepUp.shtml>

Sonia Kovalevsky Day

Math, science and engineering were hot topics of the day on April 30 for 45 high school girls, parents and teachers from seven high schools in northern Arizona.

The day began with stories of Sonia Kovalevsky, a Russian woman who earned the first PhD in mathematics (with honors!) in the late 1800s. In her keynote speech, Dean Laura Huenneke, told her personal story of how valuable mathematics has been to her as professional biologist and ecologist. Workshops on math and engineering and a lively panel discussion of professional women who rely on math in their careers filled the afternoon.

Participants rated the day a great success and encouraged expanding the event to allow more girls to participate. Sonia Day is an annual collaboration between the Department of Mathematics and Statistics and the Department of Civil and Environmental Engineering. The ETP was pleased to provide support this year. (More info: Janet.McShane@nau.edu, 928-523-1252.)

ASEE Data Show America Needs More Engineers

The American Society for Engineering Education reports that to maintain our competitive edge in an increasingly global field, America must produce more engineers. The total number of engineering degrees awarded in the U.S. decreased from 77,572 in 1985 (7.8% of all undergraduate degrees awarded) to 72,893 in 2004 (less than 5% of all undergraduate degrees). In contrast, China graduated nearly 200,000 engineers in 1999.

ASEE points to minorities and women as a likely source of new engineers. However, the past five years have shown flat rates of growth in the number of engineering degrees received by both groups. These data underscore the need for effective initiatives that bring women and minorities into the engineering community and reinforce the need for projects such as those supported by NAU's Engineering Talent Pipeline and the William and Flora Hewlett Foundation's Engineering Schools of the West Initiative. (More info: <http://www.asee.org>)



STEP UP design teams programmed LEGOS robots to follow a specific path.

2006-2007 ETP Award Cycle

The Engineering Talent Pipeline is gearing up for 2006-2007 proposals. A request for proposals (RFP) will be announced and posted on the ETP website by mid-October 2005 with proposals due before the end of November. Awards will be announced prior to the end of the fall 2005 semester.

New and continuing projects will be eligible for funding with all required to submit a proposal following the guidelines and criteria set out in the RFP.

Demonstrated Leveraging & Dissemination Key to Successful Awards

In 2005-2006, the third year in our five-year initiative, funding for ETP activities reached its peak. The last two years will see ramped down awards with increasing emphasis on demonstrated leveraging and dissemination of project results. This shift is intended to help motivate building long-term sustainability of ETP before this significant source of funding ends.

Engineering Schools of the West – Partners for the Long Haul

The nine partner universities of the Hewlett Foundation's Engineering Schools of the West Initiative met in Corvallis, Oregon on the campus of Oregon State University for our third annual meeting in June. The two-day session featured candid conversations about lessons learned, opportunities to share curricula and other practical recruiting and retention tools, and time to work together on cross-institutional projects including engineering student, faculty and administrator surveys and integrated data collection systems to help assess the effectiveness of consortium activities. The consortium also enthusiastically endorsed creating a lasting partnership to take the consortium past 2008, the final year of Hewlett Foundation funding. The consortium is uniquely positioned for attracting outside support and providing long-term leadership for engineering education in the West.

Marketing NAU & Engineering!

An innovative partnership between ETP, Engineering and Professional Programs, the Institute for Tribal Environmental Professionals' Environmental Education Outreach Program, and NAU's marketing department is creating a suite of marketing materials to help sell engineering, computer science, and construction management programs at NAU.

The goal is to provide faculty, student, alumni, and professional partners with compelling tools to communicate to prospective students, parents, teachers and counselors across the region what's great about engineering and NAU.

Portable displays, printed materials, and hands-on activity kits are already on the drawing board. When initial designs are set, they'll be fine-tuned by student focus groups, finalized, and sent out with recruiting teams across the region in a comprehensive outreach strategy to increase enrollment of students in NAU's Engineering and Professional Programs.

(More info: [Mansel Nelson](#), 523-1275 or [Dave Grider](#), 523-6157.)



Middle schoolers apply scientific principles to challenging problems in an outreach activity sponsored by ITEP.

More ETP Projects

Multicultural Engineering Program's Summer Bridge Program (PALS), mentoring and tutoring programs, student organization support, and multi-cultural events. [Fonda Swimmer](#), 523-2110

STAR on the Road and STAR Peer Advisor support to PALS students. [Hilda Ladner](#), 523-2549

AZTutor online tutoring for math, science, and specific engineering courses [Shane Pablo](#), 928-523-9190

Freshman Incentives Scholarships support under-represented and first generation students. [Mary Blackett](#), 523-5263

Design4Practice course for sophomores (EGR 286) continued support [Jerry Hatfield](#), 523-4648 or [John Tester](#), 523-0032

Advanced Software Engineering (CS386) integrates industry partners and real-world software design. [Dieter Otte](#), 523-0876

Digital Logic course (EGR 110) continued support. [Phillip Mlsna](#), 523-2112

Introduction to Bioengineering course (EGR 199) continued support. [Paul Flikkema](#), 523-6114

Four Corners Upward Bound Math and Science Program leads a collaboration to design **pre-engineering math courses** for high school students and entering NAU freshmen. [Terry Hubbard](#), 523-1315

The student chapter of the Society of Automotive Engineers' **Mini Baja competition vehicle** is a powerful tool for drawing interest to engineering careers. [John Tester](#), 523-0032

A pilot effort supports five pre-engineering students to attend NAU's summer **Nizhoni Academy**. [Melissa Begay](#), 928-523-6982

NAU's Engineering Ranks Among the Best in U.S.

Northern Arizona University's undergraduate engineering program ranks among the best in the nation according to *U.S. News & World Report's* annual ranking released August 2005. This is the second consecutive year that NAU ranked among the top engineering programs in the US--tied with a group of universities ranked 32nd in the nation.

The rankings are for undergraduate programs accredited by the Accreditation Board for Engineering and Technology whose highest degree is a bachelor's or master's degree with results based on a peer survey of deans and senior faculty.

Laura Huenneke, Dean of the College of Engineering and Natural Sciences said, "We've been hearing from the employers of our students that they find NAU engineering graduates exceptionally well prepared to join and to lead in the workplace." She added, "What's gratifying about this ranking is that the leaders of engineering education around the country also recognize the special quality of our programs."

Textbook Getaway

A recently released national poll sponsored by *National Geographic Traveler* magazine ranked Flagstaff and NAU among the top 10 great places to enjoy a "textbook getaway." Although engineering studies make for a rigorous "getaway", the poll confirms NAU is a great place to be.

ENGINEERING & PROFESSIONAL PROGRAMS RECRUITING CALENDAR 2005 – 2006

DATE	EVENT	LOCATION	CONTACT
August 25-27, 2005	New Student Orientation	NAU	Undergrad Admissions, 928-523-5511
September 7-11	Navajo Nation Fair Parade & Exhibit	Window Rock, AZ	Josh Mihesuah, 928-523-8086
September 17	Open House	NAU	Undergrad Admissions
September 24 – Oct 3	Flagstaff Festival of Science: Scientists in the Schools	Flagstaff schools	Susan Priest (USGS), 928-556-7148
September 24	NAU Mountain Campus Science Day (part of Flag Festival of Science)	NAU	Molly Munger, 928-523-5518
September 27	Engineering & Professional Programs Career Fair	NAU	ACENS, 928-523-4409
September 29 – Oct 2	SACNES National Conference	Denver, CO	Mansel Nelson, 928-523-1275
October 7, 10, 15, 21, 28	Open House	NAU	Undergrad Admissions
October 25	Engineering Day for middle schools	ACENS	Lynette Lopez, 928-523-4409
November 3-5	AISES National Conference	Charlotte, NC	Mansel Nelson, 928-523-1275
November 5-6	Construction Expo	Phoenix, AZ	Dave Grider, 928-523-6157
November 12	Open House	NAU	Undergrad Admissions
November 15	Shonto Prep School	Shonto, AZ	Mansel Nelson, 928-523-1275
November 16	Engineering Activity for High Schools	NAU	Mansel Nelson, 928-523-1275
November 17	Career Day – Engineering	Sacaton, AZ	Mansel Nelson, 928-523-1275
November 19	Open House for Transfer students	NAU	Undergrad Admissions
January 2006	Marshall Magnet School Math/Science Night	Marshall Magnet School, Flagstaff	Mansel Nelson, 928-523-1275
January 31, 2006	Engineering & Professional Programs Career Fair	NAU	ACENS, 928-523-4409
February	Regional basketball tournament	Flagstaff, AZ	
February	State basketball tournament	Phoenix, AZ	
February 20	Open House	NAU	Undergrad Admissions
February 19-25	Engineering Week	Nationwide	
February 24?	Engineering Day	NAU	ACENS, 928-523-4409
March	Yavapai County Math/Science Day	Prescott, AZ	Linda MacPhee
March 4, 17	Open House	NAU	Undergrad Admissions
March 11	Open House for Transfer students	NAU	Undergrad Admissions
March	National AISES Science Fair	Albuquerque, NM	Mansel Nelson, 928-523-1275
March	FIRST LEGOS Robotics Regionals	Phoenix, AZ	John Tester
March	Open House for Transfer students	NAU	Undergrad Admissions
March	Verde Valley Career Day	Cottonwood, AZ	Lois Lamer, 928-634-7131
April 22	Open House	NAU	Undergrad Admissions
April 22	Earth Day Table Fair	NAU	
April	Sonia Kovalevsky Math Day	NAU	Janet McShane, 928-523-1252
May	Intel Science Fair	Phoenix, AZ	Joanne Hood, 928-523-6207
June & July	New Student Orientations	NAU	Undergrad Admissions
June 5 – July 23	Summer Scholars Camp	NAU	Mansel Nelson, 928-523-1275
June 11 – July 15	Nizhoni Academy (Camp)	NAU	Melissa Begay, 928-523-6982
June 11 – July 15	Upward Bound 4 Corners Camp	NAU	Terry Hubbard, 928-523-1315
July 23-29	SW Indian Polytechnic Institute - College Prep Boot Camp	Albuquerque, NM	Shawn Newell, 928-523-8285
July 16 - 23	STEP UP Engineering Camp (A)	NAU	MEP, 928-523-2087
July 24 - 29	STEP UP Engineering Camp (B)	NAU	MEP, 928-523-2087
July 30	Open House	NAU	Undergrad Admissions

Recruiting Partners Needed!!! If you are interested in outreach to prospective engineering students in the region, please contact ETP program coordinator Shawn Newell at the contact info below.

Daily campus Visits – ongoing most weekdays & Saturdays, contact Debbie Wildermuth, 928-523-7065
 Summer Scholars campus visits – from 6 to 12 per semester, variable schedule, contact Mansel Nelson, 928-523-1275
 Outreach trips to high schools & community colleges – from 6 to 15 each semester, contact Dave Grider, 928-523-6157

Please submit additions or corrections to: Shawn.Newell@nau.edu, 928-523-8285.