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## Annual Fund Facts 2011 -2012

### Administrators:

*Dean:* Paul Jagodzinski ..... 3-2701  
*Associate Dean:* Pauline Entin..... 3-4123  
*Dean's Office:* Paula Logie..... 3-2701

### Extensions:

### Chairs

*Biological Sciences:* Maribeth Watwood ..... 3-9322  
*Center for Science Teaching and Learning:* Janet McShane (Interim) ..... 3-1252  
*Chemistry and Biochemistry:* Marin Robinson ..... 3-6295  
*Civil Engineering, Construction Management & Environmental Engineering:*  
Bridget Bero ..... 3-5650  
*Electrical Engineering and Computer Science:* David Scott..... 3-3162  
*Mathematics and Statistics:* Terence Blows ..... 3-6863  
*Mechanical Engineering:* Ernesto Penado ..... 3-9453  
*Physics and Astronomy:* Kathy Eastwood .....3-7159

### School Directors

*Earth Sciences & Environmental Sustainability:* Thomas Hoisch (Interim)..3-7198  
*Forestry:* Jim Allen..... 3-5894

### Fast Facts:

- 4,357 full time equivalent (FTE) official Fall 2009 student count. We expect an increase of 15% this academic year.
- Faculty: 142 (Tenured/Tenure-Track), 59 (Non-Tenure Track), 10 (Research Faculty)
- Staff and Professionals: 145
- 10 academic units offering BS and MS in science, math, and engineering disciplines, along with BSED in science and math teaching
- Ph.D. programs in Biology and Forestry (Geology PhD program will start 2011)
- 6 interdisciplinary centers for research and outreach, e.g. Institute for Tribal Environmental Professionals, Microbial Genetics and Genomics Center, and Merriam-Powell Center for Environmental Research
- Home to the nationally ranked School of Forestry
- \$15.1 million state-funded budget
- \$20 million in external sponsored research (over half of the university's total)

#### **New News:**

- 2 undergraduate students were awarded (in May) 15-month research scholarships from the Beckman Foundation for advancing research in life sciences (2 of 30 awarded nationally)
- In fall 2010, the School of Earth Sciences and Environmental Sustainability began a new Climate Science and Solutions Master's degree program.
- A biology undergraduate has been awarded a 2 year EPA fellowship and a summer internship in DC.

#### **Areas of Focus:**

- High rate of undergraduate student participation in hands-on research and design
- NAU is one of the nation's leading institutions in terms of numbers of science and engineering degrees granted to Native American and Hispanic students
- Small class sizes and individual attention for undergraduate and graduate students
- Application of modern genetics approaches to environmental and public health
- Basic and applied science relevant to water resources and forest resources in the western US
- Environmental science and sustainable systems (including conservation of biodiversity and sustainable technologies)
- Faculty focus on solving real-world problems; numerous faculty start-up companies
- Robust continuing education program offered to Arizona math and science teachers
- A significant collaborator and research resource to federal agencies in the West (e.g. National Forest Service, National Park Service, USGS, EPA)

#### **Points of Pride:**

- NAU is one of 13 colleges and universities in the nation to receive a multimillion-dollar grant that will help double the number of science and math teachers NAU currently is producing. The \$3.4 million grant will replicate a program modeled after the highly successful UTeach program established at the University of Texas at Austin in 1997. The National Math and Science Initiative (NMSI) awarded \$2.4 million funded by ExxonMobil and NMSI, while the Helios Education Foundation contributed an additional \$1 million. This is a collaboration with the College of Education.
- The College's engineering programs were ranked in the top 40 in the nation by US News and World Report for the 5<sup>th</sup> year in a row (2008).
- In Dec. 2008, NAU's Institute for Tribal Environmental Professionals received a \$1.75 million grant to support a steering committee of tribal co-regulators to work with EPA on solid and hazardous waste cleanup issues. EPA is also releasing a tribal strategy to advance the protection and restoration of land in Indian country. The new strategy provides a detailed plan of how EPA will strengthen its partnership with tribes to advance the shared goal of protecting public health and land resources in Indian country.
- The Department of Energy awarded researchers in Biological Sciences a \$10.5 million grant to administer the western regional headquarters of the new National Institute for Climate Change Research
- NAU's new Climate Change Mitigation class students say they enrolled in it to help "save the world." They are starting on their world-saving quest in their own backyard by working to reduce campus greenhouse gas emissions. Besides helping the local environment, the course work will help NAU meet the American College and University Presidents' Climate Commitment, which President John Haeger signed in January
- NAU researchers have discovered a new way to detect staph infections, including the deadly antibiotic resistant varieties. The new diagnostic tool identifies infections inside biofilms, which are communities of microorganisms bound together inside the body. The researchers say biofilms cause more than 70 percent of community- and hospital-acquired infections.

- A recent review (Grant et al. 2007, Conservation Biology 21(5):1139-1144) assessed the productivity and impact of programs and of researchers in the 300-plus conservation programs in North America. NAU placed in the top 40 by multiple measures, other programs usually being much larger doctoral institutions. This is a great (and well-earned) recognition of the quality of work done by faculty in Environmental Sciences, Biology, Forestry, Merriam-Powell, Center for Sustainable Environments, School of Forestry and other units on campus.
- NAU biologist Loretta Mayer and partners have found a way to induce menopause in mice without surgery -- making them better testers for drugs that may be used by post-menopausal women. They are developing similar drugs to chemically neuter and spay dogs, cats, and wild mammal populations that have grown out of control.
- The Institute for Tribal Environmental Professionals administers a \$7 million grant from the Environmental Protection Agency to train employees of tribal governments to monitor and manage environmental resource issues across North America.
- NAU and TGen received \$8.5 million to develop new ways to diagnose two deadly diseases: sepsis and community acquired pneumonia (CAP). (Sepsis and CAP are among the top 10 leading causes of death for most age groups worldwide, according to the U.S. Centers for Disease Control.)
- Alumni at NAU recently established the Louis Agassiz Prize for Writing Excellence, intended to encourage undergraduate students to enhance the quality of their expository writing skills related to science and technology through an essay writing competition. The first place prize is \$1,500, second place \$1000 and third place \$500.

## **Departments, Schools and Centers**

### **Departments**

- Biological Sciences
- Center for Science Teaching and Learning
- Chemistry & Biochemistry
- Civil Engineering, Construction Management & Environmental Engineering
- Electrical Engineering and Computer Science
- Mathematics and Statistics
- Mechanical Engineering
- Physics and Astronomy

*NOTE: **Geology** and **Environmental Science** are now part of the School of Earth Sciences and Environmental Sustainability*

### **Schools**

- School of Forestry
- School of Earth Sciences and Environmental Sustainability
  - Environmental Science
  - Geology

### **Institutes and Programs:**

- Arizona Earthquake Info Center
- Microbial Genetics & Genomics Center (Paul Keim, Director)
- Colorado Plateau Cooperative Ecosystem Studies Unit
- Institute for Tribal Environmental Professionals (Ann Marie Chischilly, Executive Director)
- Merriam-Powell Center for Environmental Research (Neil Cobb, Director)

## **Suggested Contribution Designations**

### **Dean's Funds:**

**Excellence in Engineering Education (#4085)**  
**Fund for Excellence in the Sciences (#4953)**  
**Forestry General Fund (#4100)**

### **Scholarships:**

**Engineering Scholarship Fund (#4086)**  
**Leadership Council Scholarship – Math and Science (#1466)**  
**Forestry: Kurmes, Ernest Scholarship (#1563)**

### **Special projects 2009:**

**NAU Teach Endowment (#1559)**  
**SEAKR Electrical Engineering Equipment Fund (fund#01591)**

Last year, the first two dean's discretionary funds allowed the dean to:

- Travel funds for undergraduates to go to scientific conferences
- support NAU's Engineers without Borders trip to Ghana to build safe drinking and sanitation systems
- fund the Undergraduate Research and Design Day (UGRAD)
- send students to a national engineering competition like the steel bridge competition and the Shell ecomarathon

## **Detailed information about CEFNS departments and schools:**

### **Biological Sciences:**

*Biology Department Fund #5002*

The mission of the Department of Biological Sciences is to excel in building scientific literacy for all citizens, advancing and applying biological knowledge, and educating our students for professions in the life sciences. Our students go on to succeed in medical careers, research positions, teaching and industry.

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### **Center for Science Teaching and Learning (CSTL):**

*NAU Teach Endowment #1559*

The Center for Science Teaching and Learning is a teaching, research, evaluation, and materials resource for science faculty and students across the NAU campus, K through 20 science teachers, and informal educators statewide. The mission of CSTL is to engage educators in the quest for excellence, access, and equity in science teaching and learning. The CSTL provides leadership in and coordination of science education professional development, academic programs, and outreach activities. CSTL is responsible for the recruitment, advising, and student teaching placement and supervision for secondary science teachers.

***NEW in CSTL and Math: NAU Teach!*** In 2007 the National Math and Science Initiative agreed to fund 13 universities across the country to transition their mathematics and science secondary teacher certification programs to a model developed at the University of Texas at Austin. This model, called UTeach, is based on research and has been shown to increase student recruitment into mathematics and science teaching while increasing the retention rate of their graduates to 84% after 4 years. In replicating the UTeach model, CSTL is committed to increase the number of science and mathematics teachers certifying at NAU from a current level of about 25 per year to 60 per year by 2011.

## **Chemistry and Biochemistry:**

*Chemistry Department Fund #4058*

NAU's Chemistry & Biochemistry Department offers a wide variety of programs both rigorous and interdisciplinary in nature.

- Students may choose:
    - one of two American Chemical Society (ACS) approved undergraduate degrees (one in chemistry and one in biochemistry)
    - an interdisciplinary program for health pre-professionals
    - an interdisciplinary program in pre-forensic chemistry and criminalistics.
  - Research is an integral part of their undergraduate education
  - Chemistry-specific writing is integral part of the undergraduate education
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## **Civil Engineering, Construction Management and Environmental Engineering**

*Civil Engineering Fund# 4482*

*Construction Management Fund #4010?*

### Civil Engineering, Environmental Engineering

- 200+ CE / 100+ EnE undergraduate majors
- 11 full-time / 1 half-time faculty members (w/ licensed professional engineer and land surveyor registrations)
- 2 ABET-accredited Bachelor of Science engineering programs
  - civil engineering
  - environmental engineering
- 2 minors
  - environmental engineering
  - civil engineering
- 2 master's programs
  - Master of Engineering
  - Master of Science
  - plus an "integrated" BS/MS or BS/MEng program for high GPA undergraduates
- International Engineering Certificate offered for students studying abroad
- Cross-disciplinary research with geologists, biologists, chemists, construction managers, and the Institute for Tribal Environmental Professionals
- An active ASCE (Am. Soc. of Civil Engineers) student chapter that competes in national design competitions (steel bridge and concrete canoe), sponsors speakers from the profession, conducts outreach and fundraising events, and supports other students by conducting study sessions and workshops.
- An nationally-recognized, active EWB (Engineers Without Borders) student chapter that provides service learning projects in Ghana and Honduras as well as regional outreach to rural and Native American communities.

### Construction Management

- ~225 undergraduate majors
- 5 full-time faculty (w/ licensed professional engineer and architect registrations)
- ACCE accredited Bachelor of Science construction management degree program
- Minor in construction management
- The department graduates approximately 50 students per academic year

- International Construction Certificate for students studying abroad
  - An active CMO (Constr. Man. Org.) student organization that competes in national construction competitions, sponsors speakers from the profession, conducts outreach and fundraising events, and supports other students by conducting study sessions and workshops.
  - Support of cross-campus service-learning initiatives (Mainpat Tibetan Refugee camp project, India)
  - Cross-disciplinary sustainability projects with civil and environmental engineering and the Institute for Tribal Environmental Professionals.
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### **Electrical Engineering and Computer Science:**

*Electrical Engineering Equipment Endowment # (1600 maybe or 4484)*

#### Electrical Engineering

The programs of study in electrical and computer engineering reflect strengths in applying the design process to develop electrical and electronic systems to help people live more productive and enjoyable lives. Besides small classes and personal interaction with professors, students learn through design projects and hands-on experiences throughout the curriculum. Industry comparable instrumentation and software simulation tools are vital in providing a rich learning experience. This fund helps meet the continuing need to update our teaching and project laboratories, so that our students can learn by applying what they are learning. Strengths in electrical engineering include wireless communications, error correcting codes, signal and image processing, power systems, antennas, control systems and microelectronics.

*Computer Science Fund #4483*

#### Computer Science

The programs of study in computer science and applied computer science provide excellent preparation for careers in large-scale software engineering and in hands-on applied programming respectively. Computer scientists use algorithms and data structures to harness the incredible processing power of modern computers to help people lead more productive and enjoyable lives. This fund helps provide the advanced software and computer hardware to enable students to be more successful in learning how to develop and build user-friendly and powerful software products. Strengths in computer science include bioinformatics, user interfaces, networking, distributed systems, software engineering, languages and theoretical information.

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### **Mathematics and Statistics:**

*Mathematics Department Fund #4159*

- Over 200 undergraduate majors and over 60 graduate students (full and part time)
  - Offer BS in Mathematics, BS Ed in Mathematics Education, MS in Mathematics or Statistics, MAT in Mathematics Education
  - Strong emphasis on effective teaching and engagement with all our students
  - Research areas include pure and applied mathematics, statistics, and mathematics education
  - Recently awarded a \$1.4 million grant from National Math and Science institute to fund NAUTeach – a program to train new teachers in Math and Science
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## **Mechanical Engineering:**

### *Mechanical Engineering Fund #4481*

- offers both undergraduate (B.S.E.) and masters (M.Eng. and MSE) degrees
  - Emphasis on the practice of engineering.
  - Faculty research involves undergraduate students in: Sustainable Energy Solutions, Rotorcraft Dynamics and other Aeronautical applications, Smart Composite Materials, Rapid Prototyping and Computer Aided Manufacturing, Nanotechnology and Biotechnology/Bio-Sustainability
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## **Physics and Astronomy:**

### *Physics and Astronomy Department Fund #4600*

The Department focuses on providing students the skills and knowledge they need for either employment in research or industry, or further study in graduate school. We emphasize the value of research experience for undergraduates. Research areas include astrophysics, planetary science, materials science, optics, foundations of quantum mechanics, and physics education. The Department also runs a new twenty-inch telescope which is open free to the public every Friday night, as well as being used by students for research during the rest of the week.

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## **School of Earth Sciences and Environmental Sustainability**

### *Geology Department Fund #4109*

### *Environmental Sciences Fund #4314*

#### Geology

- focus on applied and fundamental research on the Colorado Plateau and in the Grand Canyon, and extending broadly throughout North America and internationally to South America, Europe, Australia, New Zealand, and the Middle East.
- B.S. program in the upper 10% of Geology Departments in the country in undergraduate majors enrollment with five emphases
  - Environmental Geology
  - Geophysics
  - Hydrogeology
  - Paleontology
  - General Geology
- Highly regarded M.S. graduate program
- Internationally known research faculty

#### Center for Sustainable Environments

- BS degree with eight different environmental emphases
  - Administration and Policy
  - Biology and microbiology
  - Chemistry
  - Communications
  - Geology
  - Management
- Bachelors degree (B.A. or B.S.) programs in environmental studies with five different focus areas
  - Sustainability, Community, and Biocultural Diversity;
  - The Southwest Environment;
  - Globalization And Environmental Change;
  - Landscape, Interpretation, and Conservation;
  - Water And Energy Systems
- \$4,000,000 in external funding to support faculty and student research in environmental sciences
- M.S. in Environmental Sciences and Policy
- M.S. in Climate Science and Solutions
- Internationally known research faculty

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## **School of Forestry:**

### *Forestry Fund #4100*

The NAU School of Forestry offers a program that is nationally regarded for its unique approach to undergraduate education and is accredited by the Society of American Foresters. We are deeply committed to further understanding and protecting the environment, and our integrated, multidisciplinary approach prepares you for a broad range of careers.

- The School of Forestry was established in 1958 and celebrated its 50th Anniversary in 2008. History and photos online.
- The School offers a B.S. degree in Forestry, and three graduate forestry degrees, including a M.S., M.F. (non-thesis), and Ph.D.
- There are 18 tenured or tenure-track faculty members and two research faculty member.
- There are five “state line” staff members and several others (typically about 5-10 other employees) funded from local or research accounts.
- There are approximately 250 undergraduate students and 60 graduate students.
- The School of Forestry B.S.F. program is accredited by the Society of American Foresters.
- The School of Forestry operates out of the Southwest Forest Sciences Complex, a building that houses the School of Forestry in one wing and a unit of the USDA Forest Service’s Rocky Mountain Research Station in the other wing.
- The School of Forestry manages the 47,200 Centennial Forest, which consists of two large tracts and some smaller parcels all with 30 minutes drive of Flagstaff. The “CF” is used for research and teaching in forestry and also by several other departments.
- In general, the School of Forestry is one of the more research-intensive units on campus.
  - The School of Forestry was recently ranked #10 among forestry programs nationally by the Faculty Scholarly Productivity Index.
- Two of our Ph.D. students recently received prestigious doctoral dissertation improvement grants from the National Science Foundation (see this week’s Inside NAU, in the Spotlight section, for some more details about this).
- The NAU student chapter of the Society of American Foresters was selected as the Most Outstanding Student Chapter for 2009, and won third place for this award in 2011.
- Paul Beier, a professor in our school, has been elected as president of the Society of Conservation Biology, an international society with more than 13,000 members. [Paul is currently in the first year of a two-year term as President-Elect, after which he will become President for two years.]
- The School of Forestry offers 4 different week-long environmental programs for youth each summer, including a new program that focuses on climate change. The programs’ counselors are primarily forestry undergraduate students.
- Richard Hofstetter, an assistant professor, received international press coverage recently for his work on bark beetle acoustics. See both the attached document about stories generated by Bonnie Stevens and this short on-line article in the Atlantic (<http://www.theatlantic.com/magazine/archive/2010/01/beetle-mania/7828/>).