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## **Annual Fund Facts 2009**

<b>Administrators:</b>	<b>Extensions:</b>
<i>Dean:</i> Paul Jagodzinski .....	3-2701
<i>Associate Dean:</i> Debra Larson .....	3-1757
<i>Dean's Office:</i> Paula Travis.....	3-2701

### **Chairs**

<i>Biological Sciences:</i> Maribeth Watwood .....	3-9322
<i>Center for Science Teaching and Learning:</i> Julie Gess-Newsome.....	3-7160
<i>Chemistry and Biochemistry:</i> Marin Robinson.....	3-6295
<i>Civil Engineering and Construction Management:</i> (interim) Stephen Mead	3-5650
<i>Electrical Engineering and Computer Science:</i> David Scott.....	3-3162
<i>Mathematics and Statistics:</i> Janet McShane .....	3-1252
<i>Mechanical Engineering:</i> Ernesto Penado .....	3-9453

### **School Directors**

<i>Earth Sciences and Environmental Sustainability:</i> Abe Springer .....	3-7198
<i>Forestry:</i> Jim Allen.....	3-5894

### **Fast Facts:**

- 3,889 students (including graduate students)
- Faculty: 192
- Staff and Professionals: 157
- 9 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
- 6 interdisciplinary centers for research and outreach, e.g. Center for Sustainable Environments, Microbial Genetics and Genomics Center, and Sustainable Energy Solutions
- Home to the nationally regarded School of Forestry
- \$17.4 million state-funded budget
- \$24 million in external sponsored research (over half of the university's total)

**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 and Environmental /Construction Management
- 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
  - Center for Sustainable Environments
  - Geology

### **Institutes and Programs:**

- Arizona Earthquake Info Center
- Avian Cognition Lab
- Colorado Plateau Cooperative Ecosystem Studies Unit
- Institute for Tribal Environmental Professionals (Cal Seciwa, Director)
- Merriam-Powell Center for Environmental Research (Neil Cobb, Director)
- SABRE/GBI, Strategic Alliance\_for Bioscience Research and Education

## 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:

**NAUTeach Endowment (#1559)**  
**SEAKR Electrical Engineering Equipment Fund (need 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):

*NAUTeach 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: NAUTeach!*** 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.

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### **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 and Environmental Engineering and Construction Management**

*Civil Engineering Fund# 4482*

*Construction Management Fund #4010*

#### Civil Engineering

- 225 students
- 12 full-time faculty members, (of which 11 are licensed professional engineers)
- two ABET accredited Bachelor of Science engineering programs –
  - civil and environmental engineering
  - Master of Engineering and a minor in Environmental Engineering.
- The ASCE students compete major design competitions, sponsor speakers from the profession, conduct outreach and fundraising events, and supports other students by conducting study sessions and workshops.

#### Construction Management

- ACCE accredited BS-CM degree program
  - five full time faculty, including two winners of national construction educator awards
  - Three of the faculty hold PhD's , two are also Registered Professional Engineers and one is a Registered Architect.
  - Approx. 225 undergraduate majors.
  - The department graduates approximately 50 students per academic year
  - Also offer a Minor in Construction Planning and a Certificate in International Construction for select individuals from/or studying abroad.
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### **Electrical Engineering and Computer Science:**

*Electrical Engineering Equipment Endowment #*

*Computer Science Fund #4483*

#### Electrical Engineering

- Emphasis on design, innovation, real-world applications, evolving technologies, use of industry caliber design and analysis tools,
- We develop teaming, communication, and thinking skills in students
- Our advanced computing center features dual screen workstations and a Beowulf 32 node computing cluster running Linux.
- We also offer Master of Engineering and a Master of Science degree.

#### Computer Science

- Strengths in computer science:
  - data mining (the Center for Data Insight is one of the research centers of the Arizona university system)

- parallel algorithms
  - distributed systems
  - artificial life
  - fuzzy logic
  - neural networks
  - evolutionary programming
  - user interfaces
  - virtual collaborative environments
  - programming languages
  - modeling reactive systems
  - software engineering.
  - A recent graduate, Jacob Stevens sold a game he developed for the Wii to Nintendo (“Madstone”)
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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 NAU Teach – 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.) 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*

Preparation focuses on students who wish to enter a broad range of fields of physics and astronomy as research scientists, in technical support roles in research laboratories or in industrial settings.

The department emphasizes the value of research experiences in undergraduate education

- physics research areas: material science, nano-technology, and surface physics
  - astronomy research: solar system astronomy/astrophysics (including great partnerships with NASA)
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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.
- 150- 200 majors, over 100 being undergraduates, putting us in the upper 10% of Geology Departments in the country in undergraduate majors enrollment.
- Our undergraduate field studies are highly regarded; over 50% of our majors are transfer students who come to NAU specifically to study geology.

### Center for Sustainable Environments

- over 160 undergraduates in our BS degree
  - eight different environmental emphases
    - Administration and Policy
    - Biology and microbiology
    - Chemistry
    - Communications
    - Geology
    - Management
  - new Bachelors degree program 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
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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 this past fall. History and photos online.
- The School offers a B.S. degree in Forestry, and three graduate forestry degrees, including a M.S., M.F., and Ph.D.
- There are 21 tenured or tenure-track faculty members and one non-tenure track 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 175 undergraduate students and 75 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.