Undergraduate Research at Northern Arizona University

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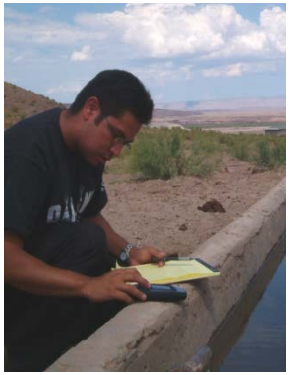




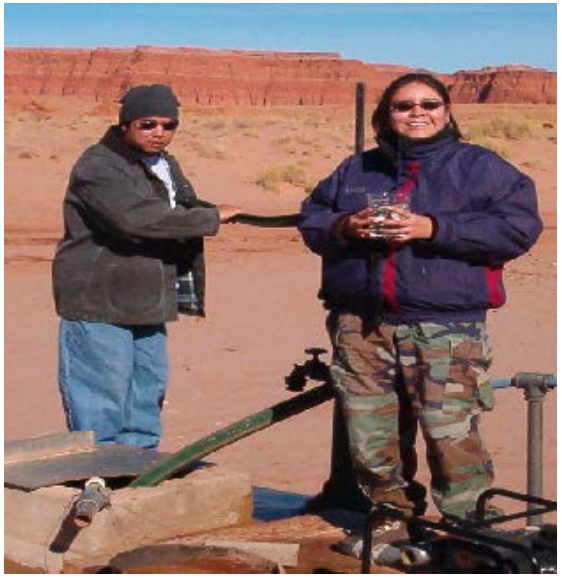
NORTHERN ARIZONA UNIVERSITY

Northern Arizona University Approach to Undergraduate Research

- Facilitate transitions to college for students from all backgrounds
- Offer research-like experiences appropriate for academic backgrounds at early stages of collegiate careers
- Conduct research projects that directly impacts the communities in Northern Arizona
- Provide funding
- Provide academic and social support services for the students
- Connect students with faculty, staff and peer mentors

Undergraduate Research Projects

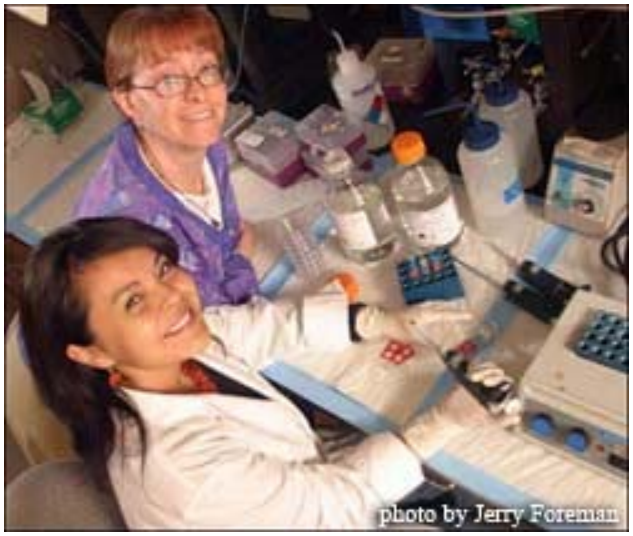
- Environmental chemistry
- Protein chemistry
- Organic and inorganic synthetic chemistry
- Theoretical chemistry



Funding at NAU Exclusively for Undergraduates Research

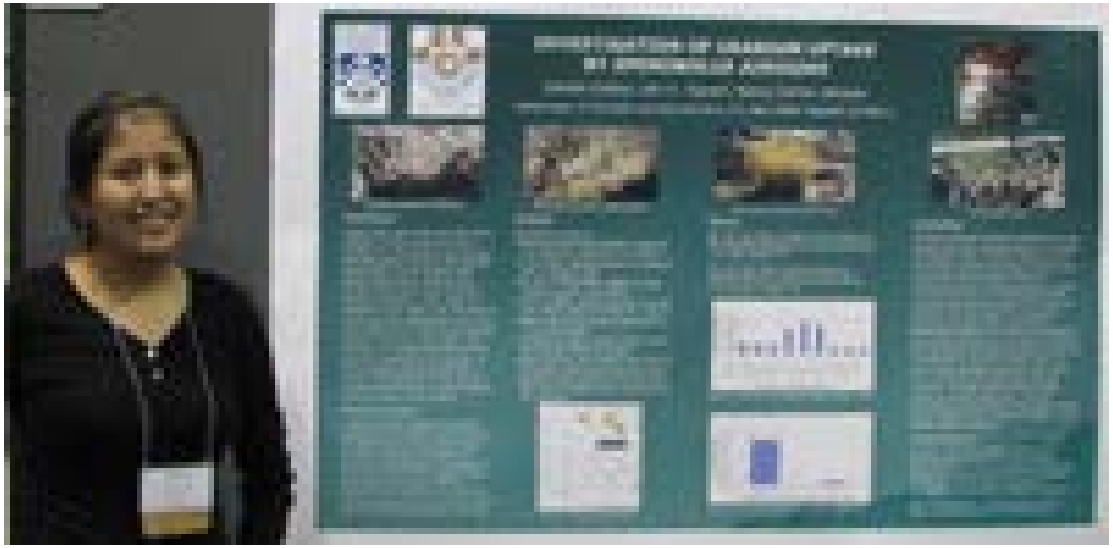
- NAU Hooper grants
- Initiative Maximizing Student Diversity (IMSD) (NIH)
- Undergraduate Research Mentoring (NSF)
- Ottens' Scholars Program (Ottens' Foundation)
- Interns to Scholars program (NEW at NAU)
- Native American Cancer Prevention Program (NCI)
- NASA Space grant
- Individual research grants

Connect Undergraduate Students with Faculty, Staff and Peer mentors



Achievements of NAU Undergraduates

- Presentations at Regional and National Meetings
- Co-authors on peer-reviewed publications
- Admittance to PhD programs
- Admittance to Professional schools
- Employment



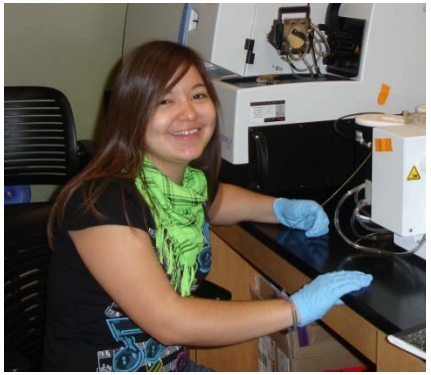
Colleen Cooley presenting her work at the 2006 National Society for the Advancement of Chicanos and Native Americans in Science meeting in Tampa, Florida

Summer Research Opportunities for Undergraduates

Nicole Campbell and Nic Pugliano spent the summer at Gore in Flagstaff as an interns

Shanadeen Begay spent two summers working at IBM in San Jose as an intern

Leslie Wagner spent the summer at the Univ. of Kansas doing research in an NSF funded Research Experiences for Undergraduates (REU)



Ciarra Greene was an intern for the summer in New Jersey at an EPA research site

Department of Energy (DOE) summer internships

Summer Research Opportunities Web Sites

National Science Foundation – Research Experiences for Undergraduates
http://www.nsf.gov/crssprgm/reu/reu_search.cfm

National Institutes of Health – Summer Undergraduate Research Internships
http://orwh.od.nih.gov/career/summerinternship.asp

Department of Energy – Summer Internships
http://energy.gov/student-programs-and-internships

Environmental Protection Agency – Internships
http://www.epa.gov/careers/internships/

How to pursue undergraduate research

- Start looking early – freshman year is not too early
- Do your homework – visit faculty and internship websites
- Be proactive – email faculty and internship coordinators to show your interest as well as to get information
- Funding vs. Credit – you may have to begin as a volunteer
- Commitment – you need to be able to commit at least 10 hours per week and be willing to work with a faculty member for at least 1 year

Graduate School

Neurosciences at University of Arkansas

Pharm-Chemistry at University of Kansas

Chemistry at University of California, San Diego

Chemistry at University of Deleware

B.S. Chemistry from NAU – what's next?

Bachelor's Degree/Entry Level	Further Education/Experience Often Required
*laboratory technician	*chemist
*quality control technician	*pharmaceutical researcher
*associate chemist	*research chemist
*technical sales representative	*chemical safety engineer
*analytical chemist	*clinical chemist
*clinical technician	*pharmacologist

Some Employers of Chemistry & Biochemistry Majors

*pharmaceutical companies
*state/federal government
*colleges/universities
*chemical companies
*food companies
*textile manufacturers
*newspapers and magazines
*petroleum refineries
*mining companies
*food and drug administration

What about graduate or professional school?

Master's programs

- Industrial chemist
- Sales (business MA/MS)
- Community college teaching
- Secondary education
- Cross-over to other disciplines (biology, physics, engineering)

PhD programs

- Chemistry
- Biochemistry/Biology-related
- Engineering
- Physics
- Material Science
- Environmental Science
- Education

Professional schools

- Medical
- Dentistry
- Pharmacy
- Veterinary
- Law

Chemistry PhD application process

- Apply by Christmas (applications are reviewed in January)
- Take the general GRE (Graduate Record Exam) – approximately 3 hour exam – two different exams
    - General: verbal, quantitative (math) and analytical writing sections (required of most departments)
    - Subject: Chemistry, etc. required by some departments
- Request letters of recommendation (2 to 3 depending on the school)
- Request transcripts
- Write a personal statement or statement of purpose
- Resume/Curriculum Vita (CV)

Other points of interest in thinking about Chemistry PhD programs

- Apply to more than one program – 3 to 5 is typical (programs have varying admission standards – apply to at least one “back-up” school)
- Learn what types of research and researchers are at the institution of interest – make sure there are a few people you would like as a research advisor
- Talk to former and current grad students
- Learn what the criteria for succeeding are at the different schools
- Look into multidisciplinary programs if interested
- MS degrees are not necessary to be accepted into chemistry PhD program
- Make sure you have strong letters of recommendation – if a professor does not know you, he/she cannot write a strong letter
- Former employers are ok letters of recommendation, but they need to people in supervisory positions
- Ask questions of departments before applying (such as: Do most grad students have TA’s or RA’s? What is the TA or RA stipend? Is tuition waived for grad students? What is the average time it takes to receive a PhD from your institution? Are there any additional scholarships or fellowships offered by your department/institution?