he Alaska Native Science & Engineering Program (ANSEP) is a longitudinal program that works with students from the time they are freshmen in high school all the way into graduate school. ANSEP increases university recruitment and retention rates through hands-on high school outreach initiatives, rigorous summer bridging programs, focused academic learning communities, organized student cohorts, networks of peer and professional mentors, community-based learning, professional internships and undergraduate research projects.

Our objective is to effect a systematic change in the hiring patterns of Indigenous Americans in the fields of science, technology, engineering and mathematics (STEM) by increasing the number of individuals on a career path to leadership in STEM fields.

Pre-College Component

Creating excitement and empowerment around careers in engineering and science

Our goal is for each Pre-College student to:

- · Learn that science and engineering is fun
- Understand STEM career opportunities
- Complete biology, chemistry, physics and trigonometry
- Participate in computer building and networking sessions Successfully complete software training
- Teach another student how to build a computer
- Work with University faculty and students
- Enroll in the Summer Bridge
- Graduate with a B.S. in a STEM discipline

The Pre-College component is the spark that illuminates a vision of a career in engineering or science for our high school students. Each participating

Pre-College Component Students in 41 different Alaskan schools

student is expected to enroll and successfully pass biology, trigonometry, chemistry and physics. Pre-College students are academically ready for university level engineering and science coursework when they arrive at the University and they are now

arriving in unprecedented numbers. We are working with 200 students in 41 Alaska High Schools.

Engineering Jump Start

Providing an early opportunity for academic and social engagement on the University campus

Our goal is for each Engineering Jump Start student to:

- Develop a peer group
- Earn credits toward an engineering degree
- Experience a university level course on the university campus · Develop faculty and staff contacts at the university
- Gain academic skills for completing an engineering degree
- Graduate with an engineering degree

In Spring 2007 we introduced ANSEP

Engineering Jump Start. In Jump Start, Anchorage School District high school

students in the second semester of their senior year who have completed the Pre-College component come to campus each Friday. They attend the weekly ANSEP meeting and take the "Introduction to Engineering" class in the afternoon.

Summer Bridge Component

Building a strong foundation for academic and professional achievement

Our goal is for each Summer Bridge student to:

- Develop a peer group
- · Earn the money they need for college · Boost their math skills
- Meet mentors
- Solidify their vision of a career in the sciences or engineering
- Understand the importance of a supportive community/study group
- · Learn to navigate at the University

• Link up with firms that will provide internships through graduation and beyond · Learn what it is like to work in a corporate office setting Graduate with a B.S. in a STEM discipline

Eighty-five percent of all students who have successfully completed the Summer Bridge have graduated with a bachelor's degree or are still enrolled at the University. Summer Bridge started with eight students in 1998 at BP. During summer 2007 there were 23 students at Alaska Department of Fish and Game, Alaska Department of Fish and Wildlife,

Alaska Interstate Construction LLC (AIC), Arctic Slope Regional Corporation (ASRC), BP Exploration (Alaska), Inc., CH2M Hill, ConocoPhillips, NANA/Colt Engineering, NANA/ Dowl Engineers, NASA Jet Propulsion Laboratory (JPL) in Pasadena, California, Peak Oilfield Services Co., and VECO Alaska, Inc.

During the Summer Bridge, new high school graduates live on UAA's campus for nine weeks before their first year at the University. A typical weekday for students begins with an 8 a.m. calculus prep class. After the class, students then report to their intern jobs, where each student is paired with an engineer or scientist in their sponsor organization. Lunch is at noon and they are back to work at 1 p.m. At 5 p.m. the students return to the residence halls where they eat and then work collaboratively on calculus prep with peer mentors from the University Retention component until bedtime. Friday lunches are reserved for "brown bag" sessions with practicing professionals from the community explaining their jobs. On Friday night and Saturday, there are required group activities. Sundays are free time and the students mostly sleep or do laundry until 6 p.m. when the collaborative calculus prep study session starts.

Each student makes a presentation for the partners at the end of the summer. Students who successfully complete the program are awarded scholarship support. The pace of the summer is tough, but students enjoy it and rise to the challenge year after year.

University Retention

Fostering an engaged learning community focused on academic success and professional development

- Our goal is for each University Retention student to: • Be effective at working in teams and understand the
- importance of a supportive community/study group • Earn the money they need for college through internships
- · Earn scholarship support
- · Develop a network of peer mentors • Develop a network of professional mentors
- Complete a research project as an undergraduate · Develop leadership skills by making presentations to students
- and professionals describing their summer internships and research projects • Develop leadership skills by leading recitation sessions and
- mentoring other students Graduate with a B.S. in a STEM discipline

ANSEP was started in 1995 with one student. In 2002 we graduated our first ANSEP Alaska Native engineer. Since 2002 we have graduated 75 Alaska Native scientists and engineers. Our program life retention rate remains above 70 percent on Approximately 100 bachelor's degree-seeking students participate.

ANSEP Biology With the support of the Alaska Yukon Kuskokwim Sustainable Salmon Initiative (AYK

SSI), Alaska Department of Fish and Game (ADF&G), the U.S. Fish and Wildlife Service, the National Fish and Wildlife Foundation (NFWF), the Rasmuson Foundation and others, we have expanded the Pre-College, Summer Bridge and Retention components to include students interested in career paths in the biological sciences. Everything stays the same as ANSEP Engineering except now, together with our new partners, we provide opportunities for biologists.

- **ANSEP Principles and Practices** Promoting college readiness, including early identification of students, motivation and preparation.
- Creating summer bridge programs and internships that provide intense summer preparation for university and industry
- Building a welcoming environment at the University.
- Infusing values of community, family and collaboration in all elements of the program.

Courtesy of Smithsonian Institution Libraries, Washington, D.C.



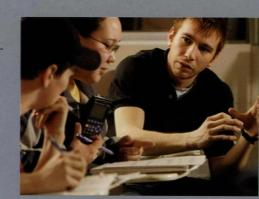
Melissa Vallee-Schein, M.D., Inupiag, was a student in the ANSEP Summer Bridge during summer 1999 at BP when she was fresh out of high school. She graduated with a degree in chemistry from UAA and in June

2007 she graduated with an M.D. from the University of Washington Medical School. Now she is working in family medicine at Providence Hospital. While in medical school she married Dimitri Schein and had a baby boy.



Michele Yatchmeneff, Unangan, became an ANSEP student in 2002 and graduated with a B.S. in Civil Engineering from UAA in 2005. During her years as an ANSEP student, she worked her ANSEP internships with Summit Consulting Services, Inc. and also worked for Summit when she graduated. This spring she joined the ANSEP staff as ANSEP Biology Director and Summer Bridge

Director. Michele is also a graduate student in the Engineering and Science Management Program.



Matt Calhoun is an Athabascan Indian from the Upper Kuskokwim River who grew up in Homer. In 2002 he was the first ANSEP student to graduate. Matt earned a B.S. in Civil Engineering from

UAA. Last year, he returned to work with ANSEP as Pre-College Program Director because "I want to motivate and empower more Alaska Native high school students to pursue a degree in science or engineering and have a voice in projects and research that happens in our state." Matt is a graduate student in the Engineering and Science Management Program.

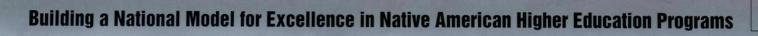


Storman Norman is Chugach Eskimo who grew up in the subsistence village of Port Graham on the Kenai Peninsula. In Spring 2007 he graduated with a B.S. in Civil Engineering from UAA. Now he is working at BP in Anchorage.



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REPORT TO THE PARTNERS



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