

Environmental Science Program
School of Arts & Science, University of Alaska Southeast
2010-11 Annual Report on Assessment of Student Learning Outcomes

Cathy Connor, ENVS Program Coordinator
May 25, 2011

Goals/Objectives:

The goals/objectives and methods of assessment for the Environmental Science Program in general, and the major and minor specifically are detailed in the revised (March 28, 2011) *ENVS Program Assessment Plan*, (submitted to the Vice Provost Carol Hedlin on April 2011.)

Data Collection and Analysis:

Diane Meador gathered institutional data, related to ENVS students' progress through their major courses during 2010-2011, from the UA Banner System for this annual report. In addition, forty ENVS alumni were contacted by email and provided with an update of the program through a spring 2011 newsletter, ENVS NEWZ

http://www.uas.alaska.edu/arts_sciences/naturalsciences/envs/faculty_staff/pubs/envs_geog_news_2011.pdf

and asked to respond to an online survey with questions developed by the ENVS faculty.

<http://www.zoomerang.com/Survey/WEB22CATTWH4QN>

Eleven/forty alumni respondents (27.5%) as of 05/16/2011 are included in this report. Our ENVS program alumni gave us their respective opinions on the value of our program courses in their workforce or in graduate school experiences. These responses provide a qualitative participant overview, over the entire 13-year period of the ENVS program's existence.

Key Findings and Measures (2010-11):

Course progress for twenty UAS 2010-2011 ENVS was collected formally for the first time from Banner in this report and is shown in the table below. If desired by the UAS administration, older student tracking data could be collected and assembled, to assess student performance over the last six years of 2-year course rotation, capstone experiences, and special topics courses.

Table 1-Diane Meador Data Extraction from Banner

ENVS Program Assessment Data May 2011

Number of ENVS Majors who were enrolled in and completed the following required course & grades earned

20

Fall 2010 and Spring 2011 Semester Data

GERs			Notes	A+, A, or A-	B+, B, or B-	C+ or C	C-	D+,D, or D-	F	W	I	NB	Totals	%earn the credit >D-
ENVS 102 (J,K)	Intro ENVS (101 prev)	Hood & Donar		1	1	1	0	0	0	0	0	0	3 P	100%
GEOL 104	Intro Phys Geo	CONNOR		1	2	0	0	0	0	0	0	0	3 P 2 P	100%
MATH 200	CALC 1	MATH FAC		0	0	2	0	0	1	0	0	0	3 1F	66%
LD REQ														
BIOL 105	Intro BIOL-1	BIOL FAC		0	1	0	0	0	1	0	0	0	2 1P 1F	50%
BIOL 271	Ecology	Szabo		0	0	0	0	0	1	0	0	0	1 1F	0%
CHEM 105	Intro Chem-1	Hoferkamp		0	1	0	0	0	0	1	0	0	2 1P	50%
CHEM 106	Intro Chem-2	Hoferkamp		0	0	0	0	0	1	0	0	0	1 1F	0%
PHYS 211	Gen Phys 1	Wehner		0	0	0	0	1	0	0	0	0	1 1P	0%
PHYS 212	Gen Phys 2	Wehner		0	0	0	0	0	1	0	0	0	1 1F	0%
MATH 201	CALC 2	MATH FAC		0	2	3	0	2	1	0	0	0	8 7P 1F	88%
UD REQ														
ENVS 338	GIS	PYARE		0	2	0	1	0	0	0	1	0	4 3P	75%
GEOL 301	GEOMORPH	CONNOR		2	0	1	0	0	0	0	0	0	3 3P	100%

GEOL 302	HYDROLOGY ORGANIC	HOOD		1	5	1	0	0	0	0	0	1	8	7P	87.50%	
CHEM 341	CHEM	STEKOLL		0	0	0	1	0	0	0	0	0	1	1P	100%	
CHEM 350	ENVIRO CHEM	HOFERKAMP	not taught in 10- 11													
BREADTH																
ENVS 110	Intro GIS	CONNOR		3	0	0	0	0	0	0	0	0	3	3P	100%	
ENVS 111	Intro GPS	PYARE		4	0	0	0	0	0	0	0	0	4	4P	100%	
ENVS 309	Mobile GIS	PYARE	no majors enrolled cross- listed with ENVS 309	0	0	0	0	0	0	0	0	0	0			
GEOG 309				0	0	0	0	0	1	0	0	0	1	1F	0%	
ENVS 407	SNOW HYDRO	HOOD		1	2	0	0	0	0	0	1	0	4	3P	75%	
ENVS 409	GIS JAM	PYARE	no majors enrolled	0	0	0	0	0	0	0	0	0	0			
ENVS 410	Advanced GIS	PYARE		0	0	1	0	0	0	0	0	0	0	1P	100%	
GEOL 310	GLAC & CLIMATE	CONNOR		1	2	0	0	0	1	0	0	0	4	3P	75%	
GEOL 315	Glac Survey	HEKKERS		3	0	0	0	0	0	0	0	0	3	3P	100%	

ENVS 393	Glacier of SEAK	HEKKERS	0	3	1	0	0	0	0	0	0	4	4P	100%
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Capstone

ENVS 492	INTERNSHIP	ENVS FAC	1	0	0	0	0	1	0	0	0	2	1P	50%
ENVS 491	SEMINAR	HEKKERS	1	0	0	0	0	0	0	0	0	1	1P	100%
ENVS 498	RESEARCH	ENVS FAC	1	0	0	0	0	0	0	0	0	1	1P	100%

Breadth Courses (Offered As Demand Warrants)

As we were unable to deliver ENVS 420 this spring semester during the faculty search process to hire a permanent Physics replacement, adjunct faculty and Lab Manager Mike Hekkers taught GEOL 315 and ENVS 393:

GEOL 315 Glacier Surveying spring semester, culminating in 5 days of glacier data collection on the lower Mendenhall May 3-7, 2011. This course was last taught in 2004 and it provides a valuable upper division research experience for our junior and senior students. Students individually presented their methods and findings. Logistical and instrument purchasing support came from the USFS Mendenhall Glacier Visitor Center, North Star Helicopters, the UAF Geophysical Institute who loaned us personnel, and a grant to Connor from NOAA to buy an ice radar set up and pay for student field assistant time. ENVS 393 was a complement to this course.

ENVS 393-Glaciers of Southeast Alaska an upper division breadth course involved critical writing and review of historical readings and review and quantitative and written assessment of current data and peer-reviewed journal articles. For the term project, students wrote a report and presented all detailed scientific and geographic information on a glacier of their choice. This special topics course will hopefully be offered every other year. GEOL 315 was a complement to this course

Meteorology 293 was taught by term faculty Andre Wehner . This course was last taught in the late 1990s. This is a GER science course for non-majors with no pre-requisites.

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This fall, GEOL 493 Quaternary Geology of Prince of Wales Island will be taught by USFS researcher David D'Amore. This course is organized for UAS students to participate in the 2011 Alaska Cell of the friends of the Pleistocene will hold their annual weekend field workshop on Prince of Wales Island to investigate the record of climate change over the last 2 million years in the landscape, rocks, sediments, and ecosystem. UAS students in both Juneau and Ketchikan will be able to earn 2 upper division ENVS credits through their participation in this event and follow up activities throughout the semester.

Capstone Experiences

The ENVS 492: ENVS Seminar enabled ENVS students to learn about ongoing climate research in Alaska in a variety of Environmental disciplines with guest research scientists working on projects all over Alaska speaking with the students.

Internships and Directed Research

Hood employed 5 ENVS and Geography students to help with field and laboratory analyses as well as data management on his research projects. Hood supervised one student internship (Tom Schwartz - Environmental Education links with Discovery Southeast) in the fall semester.

Pyare employed 4 ENVS/GEOG students to help with his research projects.

Hoferkamp was on sabbatical leave during fall 2010 and employed no ENVS students to help with her research projects in spring 2011.

Connor employed 1 ENVS and 2 GEOG students to maintain the Mendenhall, Lemon Creek, and Eaglecrest Weather stations and work on Glacier and Lake Monitoring. Connor supervised 1 ENVS 491 internship (Woodgate-Forestry Science Lab) and 1 ENVS 498 directed research (Asplund-SO₂ and Air Quality Mendenhall Valley) both students graduated this academic year.

In addition, our ENVS Lab student assistants were able to recover and scan archival weather and glacier survey data from recovered field notebooks from the Juneau Icefield Program 1960-1990s. This will be useful for future glacier research.

Alumni Online Survey Responses May 2011

Questions and Alumni responses are summarized below

1. UAS ENVIRONMENTAL SCIENCE Alumnus/Alumnae Program Perspectives What year did you earn your UAS ENVS degree?

#	Response
	Response
1	2010
2	2009
3	2008
4	2009
5	2002
6	2003
7	May of 2010
8	2007
9	2004
10	Walked in 2002, conferred in 2005.
11	2003

2. What have you been doing since you left UAS?

#	Response
	lab technician, grad school
	I started a non-profit organization named Coastal Footprint. With the help of 38 volunteers, from 6 different countries, we sailed a 26 foot sailboat from Juneau to Panama; collecting 23,730 lbs of trash from remote shores. In addition we sampled the entire West Coast sore line of North America for micro plastic debris using a surface trawl net granted to us by the Algalita Marine Research Foundation, and 5 Gyres.
	Working for the State of Alaska Department of Environmental Conservation as an Environmental Program Technician.
	Attending graduate school at the Geophysical Institute of University of Alaska Fairbanks for a master's degree in Sea Ice Geophysics
	Completed MS ENVS in 2005. Current PhD candidate, exp deg 2011.
	Commercial salmon fishing-Gulf of Alaska, private sector hydrological/ecological consultation, Environmental Technical-Coeur Alaska-Kensington, USGS Hydrologic Technician-Anchorage (2009-present)

I currently work for the Corps of Engineers in an internship program in Anchorage.
Graduate School at Western Washington University (M.S. Environmental Science) and then moved to Hawaii and am working for the Woods Hole Research Center.
2004-2006 Hydrogeologist--SC Dept of Health & Environmental Control 2007-2010 Clemson University--Planning & Landscape Architecture, MLA Awarded
I am presently the Senior Environmental Sciences Manager at a mid-sized environmental engineering firm in Anchorage, AK. I have been at this firm for 10 years and still find my career very rewarding.
Traveling, working in environmental laboratories, research and development in nanotechnology, paragliding, keepin' bees, chickens, brewing beer, and living in a cooperative house. I am currently residing in Seattle, and developing nanostructured carbon materials. I am currently working in my company's materials science and characterization department(with a lot of organic chemistry funnily enough!)

3. We are interested in how our courses translate into the competencies and skill sets that are of value to our students as they move into the workplace. How effective were our introductory courses (Introduction to ENVS, and Introduction to Physical Geology) in encouraging you to major in ENVS?	
#	Response
1	they were great, exciting, loads of information
2	I'll let you know when I get a real job! saving the world by protecting the shoreline is all that I could hope to do at this point in time. Introductory environmental science classes gave me a valuable background knowledge to draw on influencing my analysis of the physical world around me.
3	They were great - 2 of the classes I enjoyed the most at UAS.
4	Very effective, I was already planning on majoring in ENVS but ENVS 101 was an excellent course and encouraged me to

	stay in that program.
5	Very encouraging. I decided to major in ENVS after taking geology with Cathy Connor. Up until then, I only really knew that I wanted to do something science-y.
6	Very effective, but it was not only the course material, which of course initiates interest and fascination, but it was the enthusiasm of the instructors and their passion for what could and mostly couldn't be taken verbatim from the textbooks and materials.
7	I am a transfer student from CSUMB so I did not take these classes. I will say that I did take similar classes at CSUMB and the general knowledge has allowed me to understand and speak to many different science fields.
8	Taking Physical Geology, and more importantly Cathy Conner's encouragement, is what set me on the envs path.
9	I was a transfer student and only took upper-level ENVS courses.
10	The introductory courses at UAS were superlative and provided a solid foundation pertinent to my profession. Moreover, I am now in a position where I hire new staff and find very few candidates bring the experience or education afforded to me at UAS. Ten years ago, as junior level scientists, I had the ability to communicate effectively with

		high level agency personnel and often more importantly scrutinizing clients. I greatly value my course work at UAS.
11		The introductory courses in environmental science and geology that I participated in were very important in developing the skills that I use in the workplace. These courses set the framework for my education, and sparked interest and passion in the things that I currently enjoy. The opportunity to have as much one on one time with my professors was an extremely valuable part of my education. At any other school I doubt that I would have had such dedicated Professors. Based on what I saw at other universities(while spending a semester abroad) I would have been just another Freshman lost in a sea of students in another 101 class. The wide breadth of subjects offered have allowed me to apply for and obtain a variety of jobs.
4. Was your UAS GIS skill set valuable for securing employment, for your daily job requirements, or for graduate school projects?		
#	Response	
1		Yes
2		The GIS skills I acquired at UAS are among the most tools I can offer the world. I would like to obtain a masters degree in GIS and Oceanography.
3		YES. I actually used GIS at work today.
4		Yes, somewhat. Being taught and working with the GIS software in the

	<p>introductory classes (ESRI ArcMap) made learning the more advanced stuff easier. The 400-level remote sensing class introduced some of the more advanced software (ERDAS Imagine) which helped a lot in getting into other software packages beyond ESRI, and more technical aspects of image processing.</p>
5	<p>Yes. GIS has been necessary in my graduate studies and research projects.</p>
6	<p>My GIS experience led me to an internship with AK DEC modeling cruise ship wastewater disposal. This was likely the last time I used ARC GIS in any significant manner. The mapping components of the GIS courses have been contributed to my understanding survey techniques, relevance to planes, etc and provided a solid foundation for me. You would be amazed (or maybe not) how many GIS and CAD professionals don't even understand what a "projection" is, scary really.</p>
7	<p>YES! At the end of my internship I am slotted to be placed in an office to perform GIS related work. As the current workforce consists of individuals that did not have GIS classes in college those skills have made me a vital asset.</p>
8	<p>My GIS skill set has been critical to all the jobs that I have had since undergraduate. It is, by far, the most marketable skill in my tool box.</p>

9	Yes, GIS is a valuable school for displaying and analyzing spatial information.
10	My UAS GIS skill set did not necessarily come into play securing employment, but allowed me to develop a small GIS department over the last few years. In addition, I have continued with graduate level GIS courses at APU and found that my previous training from UAS put me a head of the class. I routinely use GIS both professionally and as a graduate student.
11	Yes, GIS has been valuable during my internship with the Environmental Protection Agency, as well as with my work in Environmental Sampling. Outside of work, I also am confident in GPS/GIS technology. I was fortunate to be able to take classes in GIS/GPS before GPS units were mainstream devices.
<p>5. The UAS competencies of communication both verbal and written, information literacy including researching and analyzing content; quantitative skills, critical thinking, professional behavior, and computer usage- are introduced in our lower division courses including Introductory Biology, Chemistry, Physics, Calculus, GIS, GPS, Earth Materials or Ecology. Did you receive a solid foundation of natural science knowledge and useful professional skills from these courses?</p>	
#	Response
1	Yes
2	UAS offers an incredible foundation of natural sciences. The competencies of communication and useful professional

	skills at UAS are a joke much like this run on sentence and miss leading question.
3	Yes.
4	Yes, these should be required courses for all ENV5 graduates.
5	Absolutely. The lower level division course to me are the most important . . . all later (high level) course build upon something specific we learned previously.
6	Yes. I can't think of any course that was a "plug-and-chug", all required significant effort and thought to prepare a solid statement that satisfies the rigor of research science and peer-review. CBs encouragement at the onset to retake math from the beginning was the greatest asset to my fully developing and embracing the concepts of other courses as they built.
7	Yes. Having a well rounded understanding of Earth systems and their relationships has allowed me to see the big picture and has been the basis for the start of my career.
8	I believe so. I think that the emphasis on team projects, verbal presentations, and reading primary literature were all very valuable.
9	I had already taken most of these courses through AP classes and my coursework at other institutions. I did take Organic Chemistry and Earth Materials. Both courses were valuable and challenging.

		The small class sizes were beneficial for student professor interaction and material comprehension.
10		Yes, as I indicated above, one of the most valuable tools I left UAS with is the ability to communicate at different levels regarding both actual and theoretical science. I routinely communicate with highbrow clients, attorneys, State and Federal agency personnel, and the public, and credit my comfort and ability to my education from UAS.
11		I have been commended many times on my research abilities, and analytical skills. From what I learned at UAS, and to the best of my abilities, I troubleshoot problems and implement new solutions. The ability to technically communicate with others is an important skill set. It can quickly become very confusing and frustrating when setting up or undertaking an experiment with others if you cannot explain what you are doing. It is critical to be able to effectively communicate in scientific terms.
6. Adding greater value and knowledge to your introductory knowledge base is the aim of our required upper division courses in Hydrology, GIS, Atmospheric Science, Organic or Environmental Chemistry and Geomorphology. Please comment on the value of these courses in growing and developing your ENVS knowledge and science skill sets		
#	Response	
1		these courses took everything a bit further

	and introduced the concept that many processes are inter-related and connected, responding to multiple causes
2	Upper division environmental science classes are extremely valuable and well taught at UAS.
3	Hydrology was especially worthwhile. It was good hands-on practice using math, Excel, writing lab reports, understanding journal articles, taking field notes & measurements and then writing up the work. All things I use in my current job!
4	Learning the required calculus, chemistry, physics, and other scientific tools in lower division courses became paramount in the upper division courses, where these skills are required. The knowledge and skills learned in the lower division courses at UAS were essential to understanding the upper division ones, and together give the students the skills to succeed in any field of geoscience.
5	There was not a single course that did not in one way or another expand my knowledge and skill sets for post-UAS. After 5 years of courses it was time to graduate and my only regret was that I couldn't stay for a 6th to take all the courses that I couldn't fit in.
6	I believe these courses were very valuable to the growth of my skills as a scientist. Not only did the classes expand on the fundamental systems and process

	that we learned about in the lower division classes they also required the student to perform guided research and develop a product that is on a similar of what is expected of you in a research professional setting.
7	Taking GIS, Hydrology, Atmospheric Sciences, and Biogeochemistry (etc) helped flush out and broaden my understanding of the world. Biogeochemistry, in particular, helped to pull all of the other envs classes into a more concrete paradigm.
8	I took Hydrology, Geohydrology, Geomorphology, Organic Chemistry, and GIS. Again, these courses were important in preparing me for my work as a hydrogeologist and natural resource manager. I found the physical environment in Juneau (outdoor lab), the quality of the instructors, and the small class size to be much more valuable than my experiences at larger universities.
9	My upper level courses in Hydrology and Geomorphology put me a head of many of my peers. The knowledge and science skill set provided to me at UAS has given me a professional edge and earned the respect of my clients and colleagues.
10	Hydrology was an eye opener for me. Redox redux chemistry as well as chemical transport are fascinating subjects. Between the Geology of Alaska

and my Hydrology and Organic chemistry classes, I was able to gain great insight into the workings of the world around me as well as its history.

7. The ENVIS program was designed to give you the opportunity to follow your interests through upper division breadth courses. These have included Advanced GIS, MOBILE GIS, GIS Jam, Biogeography and Landscape Ecology, Snow Hydrology, Biogeochemistry, Glaciation and Climate Change, Geology of Alaska, Glacier Surveying, Soil Science, Limnology, Remote Sensing, and special topics such as courses through the Juneau Icefield Research Program or the Alaska Cell of the Friends of the Pleistocene(Copper River Basin, Kenai Peninsula, Juneau, Fairbanks, and in 2011 Prince of Wales Island). Please comment on the value of any of these courses to you in the workplace and what courses we are not offering that would have been useful for you.

#	Response	
1		These courses were great because I was able to focus on local and regional phenomena more, which is important to me
2		The classes listed are not an option, you must take them all if you want to graduate. There are not enough students to have a wide variety of breadth courses.
3		Biogeochemistry was my favorite upper division class. I felt like it tied together all of the foundation classes I took in environmental science, geology, math, chemistry, biology and ecology. The big-picture view I got out of that class helps me out in the workplace. If there had

	<p>been graduate-level courses available in Juneau I would have taken them & probably would have had less trouble finding a job after graduation!</p>
4	<p>These courses tied together much of the lower division and required upper division courses. Glaciation and Climate Change, Biogeochemistry, and Remote Sensing I got the most benefit from. Offering some courses specifically in geophysics would be great.</p>
5	<p>Most of these were not offered when I was a student (only 1 GIS, Geology of AK, Soil Science, Limnology, and Remote Sensing) and due to scheduling issues, only was able to take Geology of AK. Obviously AK specific, but the tools used in the class were applicable to other upper division geology courses I went on to take. Other useful classes: Biogeochemistry (see it is listed now), Geostatistics</p>
6	<p>First, Geology of Alaska was the best course I ever took; I don't think I ever read so much (that was so over my head initially) and then synthesize such complex processes in such a constructive an enjoyable manner. All of the ud courses I took (Snow Hydro, ArcGIS, Limno, Soils, Glac and Clim Change, Remo, GeoHydro, MendGlac Survey, etc) gave me such a broad perspective of the env interconnectivity and dependence of</p>

	<p>one system and process on another. I think this was/is the most memorable and by far the most useful of what I got out of UAS ENVS. Unfortunately there is little that can be done to one system that may not catastrophically effect another in the larger perspective, therefore a balance is necessary and that balance must be weighed primary to all other aspects. I wish that courses in Hydraulics, Fluid Dynamics, and other fundamental fluid engineering courses had been offered when I was there. We very (emphasis on very) exposed to these concepts with TW as they were integrated into everything he taught, but when looking to ENGR programs for grad school, these are pre-reqs for most. Also computer science classes; programming is also one of those pre-reqs (MATLAB, VB, etc) that grad schools are looking for; incorporation of these courses would round out the program, but it might become a 7-year BS to truly do it right.</p>
7	<p>I focused on the GIS related classes and they have put me ahead of other individuals in my field/workplace. I would stress the importance of keeping GIS classes current. For example the university needs to be using the most current versions of software for things like ESRI and ERDAS products. Also the classes should stress not only learning to</p>

	<p>use these classes but also helping students to develop resource guides to assist them in finding answers after graduation. I still have many of the materials used in classes and use them as reference material on a daily basis.</p>
8	<p>Remote sensing and GIS were invaluable during my graduate studies/employment and now with my new job working as a Remote Sensing and GIS analyst for the Woods Hole Research Center. Biogeochem. provided a broader understanding of the world into which the other envs classes could be incorporated.</p>
9	<p>I wish Landscape Ecology was offered when I went as it parallels Landscape Architecture in several ways concerning pattern making in the landscape. I think adding a Environmental Engineering and/or Environmental Design courses would be beneficial in understanding the different applications and interdisciplinary opportunities of environmental science in addressing the challenges and issues of natural and human (built) infrastructural interaction.</p>
10	<p>Please comments above regarding hydrology and geology related courses.</p>
11	<p>I received my Remote sensing and Photogrammetry education at the University of Montana. I was very fortunate to be a JIRPer the summer spent researching the Juneau Icefield</p>

was very helpful in developing my Research abilities. The program fostered my freedom to pursue subjects that I was passionate about. This fieldwork experience allowed me to be a step ahead of most other college graduates.

8. Our capstone courses help us to draw together all of your university experiences and distill them into focused higher level work. These include the Environmental Science Seminar, Independent Research, or Internships. Did any of these experiences help you with gaining employment, graduate school admission, or with research presentations and publications?

#	Response
1	Wow, it was a culminating part of my degree, for sure. In my internship I was able to explore many more specific things I am interested in, learn about collaboration among scientists, and how science goes on in the "real" world
2	This part of the program is the weak-link. The Environmental Science Seminar is poorly done. I got nothing out of the Environmental Science Capstone Courses. In contradiction the ODS Capstone was an amazing life changing experience.
3	My GIS internship with JPD gave me great experience and probably helped me get the job I'm in now.
4	I took part in Independent Research. Although no publications were submitted, I think this exercise helped me get into

	graduate school in that I was able to work in the scientific arena in a collaborative setting while still being the primary decision-maker for that study.
5	I don't think any directly contributed to graduate school admission or with presentation/publications. However, seminars certainly kept me informed about current topics in ENVS and independent research projects gave me hands-on experience.
6	All of the seminars, independent research, and internships helped me in one way or another. I haven't had to go through many interviews, but if there is one thing that has stood out in placing me in the final selection of candidates it has been "to us you seem to have a lot of experience", and that's the truth. Without the dedication of the professors seeking opportunities for their students from the vast env laboratory of southeastern Alaska, we wouldn't have had near the opportunities we did to gain real experience doing real science.
7	Yes. I took guided research and tied it into local projects while working for the Corps of Engineers and going to school. The Environmental Science Seminar was very helpful because it required the individual to spend a large amount of time on one specific topic which is similar to work required in the professional

	environment.
8	I conducted independent research with Dr. Eran Hood the year after I went through the REU program. We continued the project (studying the impacts of glacier on streams) for a full year, during which time I was able to attend scientific meetings in California and Florida, as well as publish our results in the Journal of Geophysical Research-- Biogeosciences. This was hugely helpful for my career advancement.
9	Working one on one with the faculty in authentic Alaskan research scenarios was certainly valuable in gaining my initial employment. What a great story and place to study environmental science! Cathy Connor was great and I got a lot of 'in the field' experience that really translates well as far as applying academic concepts into real world application.
10	I found great value in both my internship (where I still work 10 years later) and my independent senior project which allowed me to present at a professional conference.
11	The Technical writing class has been very helpful with putting together reports, data, experiments, slide decks, reviews, and presentations. My internship was very important in that it allowed me to get work experience before my degree. The

individual support and attention that I received from my professors and mentors was very beneficial to my personal understanding of my fields of study.

9. Do you have any additional comments for us?

#	Response
1	UAS is great especially with low student/teacher ratio and excellent instructors. UAS gave me awesome experiences and I feel ready to go onto the next stage: grad school.
2	The Environmental Sciences and Outdoor Skills and leadership faculty are an amazing group of people
3	The math, physics, chemistry, geology, and biology requirements at UAS' ENVS program are essential to becoming a well-rounded scientist in any geoscience related field, and the instructors at UAS are awesome.
4	Thank you. What I gained from UAS ENVS program and professors(even the bust-your-balls ones, damn you!) can never be repaid. Your ears should ring often as I boast of the UAS ENVS program and its accolades. Keep it up!
5	I would suggest including classes related to environmental law and scientific writing classes. Also support the ENVS staff, the university has a very talented staff and should do what it takes to hold on to them!
6	The small classes, opportunities to work

	closely with instructors on real-world research, and great natural laboratory that is SE Alaska made UAS an ideal place to pursue my undergraduate degree.
7	"Alaska is larger than the civilized imagination." -John McPhee What a great learning environment and personal experience. I lived in Juneau and attended the University for two years. I am extremely proud of having graduated from UAS.
8	I appreciate the education UAS provided me each and every day.
9	I guess I have been very busy this week. Its Friday and I am just finishing this off. I have fallen asleep while answering these questions 3 times now! Hope all is well. and keep up the good work! missing all you juneauites

Proposed Program Changes/Measures Based on Assessment Results:

No assessment driven changes are proposed for the upcoming academic year; however, we continue to believe in experiential student learning through field science and research experiences as our research grants allow..

To recruit Alaska high school students into UAS science programs, Connor and ENVS Adjunct faculty Hekkers will again serve as faculty of the summer 2011 *Design Discover Research* courses to promote STEM field science opportunities for Alaska high school students in cooperation with the Alaska Summer Research Academy in Fairbanks.

Hood will mentor 1 National Science Foundation - Research Experiences for Undergraduates (REU) student in the summer of 2011. This student will be working on a project to understand how glacier change is impacting river biogeochemistry. Hood will also employ two UAS undergraduates, one recent UAS graduate and one undergraduate from Canada to work on three separate research projects funded by the National Science Foundation. These students will gain skills in field sampling, biogeochemical laboratory techniques, and data analysis. Finally, Hood has also recruited an Alaska Native high school student to work on his NSF glacier biogeochemistry project for the summer.

Cathy Connor and Mike Hekkers will work as summer faculty for the 8-week undergraduate glaciology field courses ENVS 493 and ENVS 193 in cooperation with the Juneau Icefield Research Program (JIRP), which has trained climate scientists from around the world for over 60 years. This summer, 22 students from the US, Canada, the UK, and France will earn UAS credits (ENVS 493/193), and pay although UAS tuition. An equal number of faculty and staff will participate in the program. In addition a group of 10-14 High school students from the Atlantic coast will earn credits and pay tuition (ENVS 193) during a 2-week introduction to glaciers program in July. Although no UAS students are participating in JIRP this summer, over the years we have had 9 UAS ENVS students participate in the program. In addition, Connor will explore barriers to Alaska Native students and other underserved minority students to majoring in ENVS and GEOG.

Eran Hood will continue his biogeochemistry studies of AK coastal glaciated watersheds, employing 1 ENVS and 1 Geog student as well as 1 recent graduate of the ENVS program and a Canadian student.

Sanjay will continue to develop resources to support the ENVS and related GEOG programs, including increasing capacity of the Southeast Alaska GIS Library to serve as a training and workforce-springboard resource for students; refining and finalizing the GIS certificate program; and hiring of students on a wide range of projects in biogeography and spatial analysis, from migratory seabirds and paleo-geographic modeling to humpback whale distribution. Sanjay is also formulating a UAS undergraduate research program through his role as chair of UAS research committee: this will serve ENVS students by centralizing UAS research opportunities and providing competitive funding through an annual awards program. Sanjay underwent tenure and promotion review and successfully advanced to associate professor in ENVS.

A position in forest ecology or related is slated to be added to ENVS in 2013, pending EPSCoR funding approval.

Lisa Hoferkamp will continue to investigate contaminant attenuation in nearshore environments of southeastern Alaska including estuarine, created and natural wetlands. She currently employs one student in a study of metabolic attenuation of brominated, flame retardants. The results from that study will be used with results from attenuation studies in anaerobic sediments to explain the prevalence of specific forms of brominated, flame retardants in sediments and biota. Dr. Hoferkamp will initiate a revised version of CHEM350, Environmental Chemistry, in fall 2011 wherein the laboratory portion of the course will involve team projects based on analyses of ecosystem components using complementary groups of analytical instruments. A large part of the equipment around which this course will be centered was acquired in a 2009 NSF Major Research Instrumentation grant in which a primary objective was to increase undergraduate exposure to advanced analytical instrumentation.

New Physics faculty Jason Amundson will arrive this summer and will introduce a new upper division course to our program. It will incorporate ENVS 420 Atmospheric Science taught previously by Heavner and include other geophysical methods of investigating the Hydrosphere, Cryosphere, Lithosphere, and Biosphere.

A new adjunct faculty, from the Marie Drake Planetarium, will teach non-majors ASTR 225 Intro to Astronomy, a very popular course for general education credits in the sciences, as it has no prerequisites.

Cathy Connor was granted sabbatical leave for Fall 2011. The purpose of this is for her to explore roadblocks and challenges to Alaska Native and other underserved minority students enrolling in UAS Science ENVS and GEOG Programs.

Assessment Plan Changes Based on Assessment Results:

No additional changes in the philosophy, purpose and structure of the environmental sciences program assessment plan have been made or proposed based on this first year of data.