Self-Study 2002-2015

Environmental Programs, College of Geosciences
Texas A&M University
Self-Study 2002-2015

Executive Summary

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Environmental Programs in the College of Geosciences (ENVP) include Environmental Studies (ENST) and Environmental Geosciences (ENGS) undergraduate degree programs. These interdisciplinary programs draw upon curricula in Atmospheric Sciences, Geography, Oceanography, and Geology in addition to geosciences courses created for these programs. ENGS requires engineering math and offers themes for specialization. ENST, which originated in 1973 as the Environmental Studies Option in Geography, requires business math, social science, and policy courses. Since approval in 2002, we have awarded 185 ENST and 210 ENGS degrees, increasing from fewer than 20 per year in the mid 2000s to over 50 after 2010. Our current student enrollment is 262, divided evenly between ENGS and ENST.

Many students graduating with degrees in ENGS or ENST pursue careers in government, natural resources, and environmental consulting, while others continue their education in graduate or professional schools. Former students work with municipalities in many capacities, such as managing GIS databases or water supply systems. Other students are employed by state agencies, serving as investigators for air and water standards. Our former students work for various types of natural resource firms, including oil and gas production and midstream firms. Their job titles include environmental scientist, environmental geoscientist, environmental health and safety officer, environmental and regulatory compliance advisor, and regulatory operations analyst. Our former students work for environmental consulting firms that prepare impact assessments, seek permits, and conduct remediation. Their job titles include field technician, environmental scientist, environmental geoscientist, and air quality scientist. Several students have obtained law degrees or master’s degrees, and a small number are enrolled in doctoral programs.

Student enrollment in ENST and ENGS programs grew rapidly in the mid 2000s, providing rationale for institutional and curricular reforms during 2006–08. Reforms included formalization of an “environmental faculty” and appointment of a
permanent director and academic advisor. These reforms, which have provided stability and excellence in student advising, allowed opportunity for program leadership, improved student recruitment, engagement with former students, program-level assessment, and curriculum revisions. The degree programs are inclusive, as evidenced by the high percentage of change of major and transfer students, while maintaining opportunities for high-impact learning experiences through internships, research hours, required capstone course, and study abroad offerings.

Since 2012, some required or desirable courses, especially courses relating to environmental policy, are taught infrequently. The capstone course, GEOS 405, has not attracted the appropriate number of faculty instructors. This is a consequence of the fact that the number of instructors willing to teach in our program has not grown in proportion with the number of students enrolled, and it provides evidence for the weakness of the model of faculty engagement with Environmental Programs, termed “no-money-changes-hands.” This model was partly implemented after an informal review in 2008, leaving us with a de facto “volunteer” model. This problem will only worsen as we strive to achieve our goal of enrolling ~300 students in our degree programs and providing the curriculum that will attract high-quality applicants, transfers, and change-of-majors. Possible solutions include reforming the appointment process to the environmental faculty, including ENGS and ENST curricular needs as hiring criteria in the academic departments, and hiring non-tenure-track faculty with secondary teaching duties in one of the academic departments.
Chapter 1. Introduction to Environmental Programs in the College of Geosciences

a. Program History

Environmental Programs in Geosciences (ENVP) have never been formally reviewed by an external panel; therefore, we have not previously written a narrative of our program history. We believe it is important that reviewers and environmental faculty understand how and when the programs originated and when program leaders implemented reforms.

Program Origins, ca. 1973

Environmental Studies (ENST) and Environmental Geosciences (ENGS) degree programs were proposed in 2001 and authorized by the Texas Higher Education Coordinating Board in 2002.

ENST has origins ca. 1973 as the Environmental Studies Option (ESO) in the Department of Geography. The 1974–75 undergraduate catalog described the ESO curriculum as designed to enhance understanding of the man-environment relationship, with emphasis on alternative approaches to the solution of environmental problems. The curriculum develops knowledge of those elements of both the physical and human systems which interact to produce such conditions as over-population, resource depletion, and pollution. Each spring semester, students will participate in a workshop [GEOG 380] to expose them, at problem-solving and decision-making levels, to a variety of local and regional environmental issues, one of which will be selected for detailed study. Students will be involved in the initial formulation of the semester project and will be responsible for developing and carrying out an appropriate strategy for its solution.
This description of the ESO remained unchanged in TAMU undergraduate catalogs until replaced by the Environmental Studies degree program in 2002. In 1994, the ESO was approved as a program, with the code 03.0102.20, attached to the Geography B.S. degree. This program existed into 2001, when the degree program proposals were moving through the University’s committees. In 2001, Geography’s Environmental Studies Program included three tracks: environmental science, management and policy, and GIS and remote sensing. The ENST degree developed from the management and policy track, while the environmental science track developed into the ENGS program. Beginning in Fall 2014, Geography housed a new degree, Geographic Information Science and Technology, developed from the previous GIS track in the former ESO.

We do not know how the ESO originated, or who led the proposal, but it is likely that Joseph Sonnenfeld, emeritus professor of Geography who died in 2014, was the likely protagonist of this initiative, which complemented existing “options” in the undergraduate Geography curriculum. (Joseph Sonnenfeld’s son, David, is an environmental sociologist and Professor of Environmental Studies at SUNY’s College of Environmental Science and Forestry.) GEOG 380, the repeatable workshop that was fundamental to the ESO, was probably offered for the first time in Spring 1974 with this description: “the study, understanding, and solution of real man-environment problems based on principles learned in the classroom. Library, laboratory, and fieldwork carried out by individuals and in groups” (Undergraduate Catalog, 1973). GEOG 380 is required in ENST degree programs and normally taught every semester, including faculty-led study abroad offerings tailored for ENST and ENGS students, as we discuss below.

GEOG 330, another key course to ENST and ENGS, originated around the same time as the ESO. Reflecting the state of social science and environmental politics of the mid-1970s is the title of the course, “Resources and survival,” with this rather dire description: “Changing demand for land and sea resources. International conditions of population growth, resource depletion and geopolitical control. Resource perceptions and decision making” (Undergraduate Catalog, 1975). GEOG 330 is now called “Resources and Environment.” Normally, this course aims to interpret natural resource use through political ecology framework, rather than from a neo-Malthusian perspective. This course is required in ENST and ENGS degree plans.

The only degree during the 1970s
similar to the eventual ENGS was the curriculum in Earth Sciences, a B.S. designed for middle and secondary school teachers in Earth Science. Undergraduate catalogs in the mid-1970s noted that this degree was college administered but warned students that “it does not provide the background for admission to graduate studies in the Geosciences.” This program ended, apparently, in the late 1970s because it disappeared from the 1979–80 and subsequent catalogs.

Program Creation, 2001–02
The College of Geosciences sought to create interdisciplinary degrees from the ESO in addition to an entirely new degree, initially termed Environmental Science but later renamed as “Environmental Geoscience” because of opposition from outside our College. These degrees were first described in the 2002–03 undergraduate catalog (Catalog 125) as College of Geosciences curricula. ENGS “[embraced] all the disciplines of the Geosciences to give the student a rigorous interdisciplinary education including issues associated with environmental policy.” ENST was “a blended degree of science and policy with an interdisciplinary understanding of Earth’s processes and policy aspects of human interactions with the environment.” Also around 2001, the College of Agriculture and Life Sciences began developing its own environmental degrees, Environmental Studies and Bioenvironmental Science.

These new degrees, and the debates surrounding their creation, indicate that “environment” had become a desirable intellectual commodity on campus, with many claimants, although no party succeeded in implementing a campus-wide “environmental” degree program. Notably, in 1996, the College of Agriculture and Life Sciences supported the Environmental Studies curricula because it complemented “environmental science curricula in this college,” but when the new proposals for Environmental Science and Environmental Studies were developed in 2001, this agreement had been abandoned.

The May 2001 proposal for a BS in Environmental Science (College of Geosciences) included four themes: coastal studies, water in the environment, human interaction with the land, and climate change. The degree was designed to “equip students with knowledge of the earth
to enable them to be good stewards of our planet. . . .with concern for earth’s environment being an increasing focus globally, it is incumbent upon the university to offer a degree that will aid in creating an informed citizenry and capable employees of the future for the needs of the state and nation.” Documents noted that “the increasing demands that population growth puts on natural resources and our earth’s environment require that students be trained to be informed stewards of our planet.” College leaders noted that ~60 students enrolled in the ESO (Geography) would pursue the Environmental Science degree, and most ESO students “have changed curriculum from other programs on campus.” Officials believed that 105 students would be enrolled by year 5. Founding documents are presented in Appendix A: Program Origins.

ENST and ENGS programs relied almost entirely on existing courses offered in the College’s academic departments. But the new degree plans included two new courses, GEOS 105 and GEOS 405. GEOS 105 was designed as the introductory course for ENGS and ENST students, while GEOS 405 would serve as a senior-level integrative, interdisciplinary, problem-based course; subsequently, GEOS 405 became a capstone course and, to meet University demands, a writing-intensive course. Faculty moved GEOS 405 into a research-focused course that requires teamwork on research projects either determined by the students, in consultation with the faculty instructor, or research projects that relate to the overall research that the faculty instructor determines a priori (Appendix B: GEOS 105 and GEOS 405 syllabi). As GEOS 405 evolved, it also became a key means by which program leaders assessed student learning outcomes at
the program level). After university approval of the new degrees, faculty
created other GEOS courses, such as Climate Change (GEOS 210) and
Global Change (GEOS 410), which are now included in the program
curricula. During this period, faculty
did the task of student advising, with
Vatche Tchakerian, Associate Dean for
Academic Affairs, responsible for most
of these efforts.

Program Reforms, 2006–08
College administrators and faculty
made significant changes to the degree
programs in 2006–08 to cope with
increased student enrollment (Figure
1-1) and weak faculty engagement.

The first evidence of reforms appeared
in July 2006 with the formation of an
“executive committee of the faculty of
environmental geosciences,” headed
by Bob Stewart (now retired) and
supported by Don Collins (Program
Director, 2010–14), Jennifer McGuire
(GEOL; resigned ca. 2008), Sarah
Bednarz (GEOG), Andrew Millington
(GEOG; later interim and permanent
Program Director, 2008–10), and
Vatche Tchakerian (GEOG). Dr.
Tchakerian, who was then Associate
Dean for Academic Affairs, encouraged
newly appointed Dean Björn Kjerfve
(2004–09) to appoint a Director of
Environmental Programs charged
with overseeing the degree programs.

Figure 1-1. Student enrollment in ENGS and ENST degree programs, from Fall 2005 to Spring 2014.
and an academic advisor to assist students. Andrew Millington, who was appointed Professor of Geography in 2005, soon joined the existing network of faculty who had participated in the creation of both degree programs. The executive committee supported Tchakerian’s call for Dean Kjerfve to appoint an interim director, appoint an academic advisor, provide space for both director and advisor, and help communicate with the faculty. A single academic advisor would create “program consistency and coordination.” Space issues were justified by the fact that the degree programs “do not have a home, and there is no area where students in the program can meet and get to know each other.” The communication imperative was justified by the claim that “there is much confusion about the degree programs . . . some faculty are not comfortable with the programs . . . more information will lead to buy-in by critics on the faculty.” In summary, the executive committee noted in July 2006 that the degree program “has grown to the point that it now needs strong leadership and a coherent tactical plan for the future.”

By January 2007, Millington had developed a set of tasks that included: (1) developing an environmental faculty in the College of Geosciences; (2) creating an environmental programs committee; (3) revising ENGS and ENST degrees; (4) creating a web page for the programs; (5) improving communication with students and faculty; and (6) developing advising pathways. In September 2006, Dean Kjerfve appointed Millington Interim Director of Environmental Programs, effective January 2007.

During 2007, Dean Kjerfve and Interim Director Millington invited Bruce Coull, Dean Emeritus of the School of the Environment at the University of South Carolina and president (2006–07) of the Council of Environmental Deans and Directors, to conduct an informal review of the programs. In December 2007 Millington convened the first “open meeting” of Environmental Programs in the College of Geosciences to focus on developing bylaws (then in draft stage), revise degree plans (especially the themes in the ENGS degree: climate change, human-land interactions, water, and coastal) and revise technical electives.

In February 2008 Coull interviewed faculty and students, reviewing the administrative structure, curricula, and student perceptions. Coull’s report, presented verbatim in Appendix C: Program Reforms, identified key problems that had developed since 2002. Some faculty believed that there were no rewards for supporting ENGS or ENST degree programs. Department Heads viewed the degree programs as competing with their disciplinary programs. Coull viewed the staffing and instructional arrangement as the “voluntary” Model
1 and not acceptable for “long-term viability of the program.” He suggested three other models, and emphasized that no matter the model selected, the program required a permanent director, staff person, advisor, and space, reaffirming what the Executive Committee had been supporting since 2006.

Coull’s Model 2 was termed “no-money-changes-hands” because faculty would have a “core appointment” in either ENVP or their home department. Departments would retain salary and credit hours of these “core faculty” but “a written letter of appointment (from the Dean) would stipulate that undergraduate teaching and advising would be in [ENVP].” Moreover, the director would write a yearly letter of evaluation that would be weighted equally with the Department Heads in terms for annual assessment. A process parallel to departmental review of tenure and promotion would occur among “core faculty” that would be included in the candidate’s dossier. Model 2 even included the practice of a joint decision between the “core” environmental faculty and department regarding replacement hires for departing faculty.
Model 3 would have included transfer of salary to Environmental Programs, creating a “financial base” because resources from student credit hours would accrue partly to environmental programs. In this model, tenure and promotion votes would “have equal weight,” rather than being informative to the departmental tenure and promotion process. Model 4, which Coull did not think was feasible, involved the creation of a new Department.

Coull’s views on the ENGS and ENST curricula focused on trimming the number of core courses, while encouraging interim director Millington to include a course in ecology as required in both degree programs. Finally, he met with 14 students, who complained about advisors who lacked knowledge on the curriculum, about difficulty substituting courses, and how the degree programs needed a list of technical electives. Students also emphasized that there was “little sense of community,” and urged the creation of “a lounge area, forum on jobs, a forum on graduate school admission, a forum on the degree and curriculum.”

The executive committee and interim director Millington supported Model 2 and the other recommendations of the Coull report. Millington formalized these recommendations in a March 2008 “Business Plan” that justified College investment in a permanent director at rank of full professor, an academic advisor, a student worker, renovations for office space, and an operations budget for recruitment and program development. The Business Plan, presented in Appendix C: Program Reforms, noted “significant potential for growth” because of teaching of environmental science in Texas high schools, employment prospects, and increasing concern about environmental issues. Millington estimated that the number of ENGS and ENST students enrolled could increase from to 200 by 2012–13. For this reason, the business plan argued for the appointment of a “salaried academic advisor” because “the current altruistic model of faculty engagement [student advising] with the Environmental Programs will have to be changed to cope with expanded demands on faculty time.”

The result was a delayed but nearly wholesale implementation of the Business Plan, ending the “reform era.” The Dean appointed Millington
as director; the College hired an academic advisor, Emily Dykes, who had just completed the ENST degree, and a student worker (all effective August 2008); space renovation of 105 and 109 O&M for ENVP had begun with financial investment (although no lounge was permitted in O&M), and the environmental faculty approved Bylaws, which created the Environmental Programs Advisory Committee (EPAC) and the Environmental faculty (Appendix C: Program Reforms). In addition, the number of environmental faculty increased from 12 to more than 30 by 2010. An important initiative that Millington and Dykes undertook in this period, around late 2008 and early 2009, was to have lunch meetings with General Studies academic advisors to help launch the program and to encourage advisors to promote the program to students who did not have a declared major.

The bylaws aimed to implement Coull’s Model 2 by defining “full members” of the environmental faculty according to the following criteria: “(i) teaching a key course in the Environmental Geosciences and/or Environmental Studies degree programs; (ii) mentoring and advising degree candidates; (iii) supervising undergraduate research; (iv) authoring relevant textbooks; (v) conducting pedagogic research in environmental geosciences or studies; or (vi) undertaking environmental outreach activities.” Moreover, the Bylaws stipulate that “Full Members receive a letter of appointment from the Dean of Geosciences outlining the division of their teaching and service between their department and the Programs in a proportion agreed by the Dean, the Department, Center, or Institute Head, the Director, and the Full Member.” This language is similar to the Coull report, as is the provision regarding annual evaluation, which stipulates that the director “annually evaluates each Full Member’s teaching and service to the Programs and provides this to the Full Member’s Department, Center, or Institute Head.” Another key provision of the Bylaws, adopted from Coull’s Model 2, relates to the tenure and promotion process of full members of the environmental faculty:

When a Full Member is undergoing mid-term review or consideration for tenure or promotion, the Programs Standing Committee for Tenure and Promotion provides a report on the teaching and service of a Full Member to the Member’s department as input to the department’s tenure and promotion committee. If the Dean’s letter of appointment identifies specific expectations regarding participation in the Programs, this report should be given weight in proportion to the assigned level of participation in the Programs.

These provisions were not fully implemented. Environmental faculty do not have an appointment letter that
indicates their duties regarding ENGS and ENST degree programs, and the evaluation of the program director rarely has been included in tenure and promotion dossiers of environmental faculty seeking promotion from Assistant to Associate Professor or from Associate to Full Professor. ENGS and ENST curricula are not normally considered when defining essential or desirable characteristics of faculty replacement hires, although the human-environment white paper, approved by the Geography faculty in Spring 2013, included specific mention of contribution to ENGS and ENST programs. However, EPAC has continued to function as outlined in the bylaws. All departments are represented through elected representatives. Elected student representatives are included in meetings, which normally occur two to three times a semester.

Program Stability, 2009–2015
Millington resigned in 2010 to take a position in Adelaide, Australia, and was replaced by Don Collins, tenured in Atmospheric Sciences, who managed the strong growth in student enrollment by teaching GEOS 405 and GEOS 105 and ensuring other courses were offered in a timely manner, maintaining the function of EPAC, implementing assessment procedures, approving the “fast track” ENGS and non-thesis master’s of Oceanography program, and communicating with environmental faculty. Under Collins, the director position received a formal program description and the academic advisor position was upgraded to program coordinator, whose duties include program development, expansion, and recruiting in addition to academic advising. Collins continued the Environmental Tailgate event, first held in 2009, and scheduled before one home football game in the fall semester to encourage former students to network with current students. Collins also instituted the “calls for support” that helps fund high-impact learning activities and took GEOS 405 students to the Texas A&M University Soltis Center in Costa Rica to develop their research projects. He compiled a list of former students and their employers to serve as a database to establish an external board. Collins also developed the Earth Science and Climate Change minors that our program controls.

Critical to the stability of degree programs during this period was the role of Emily Dykes, who established a regular newsletter and became the social advisor to students in addition to her formal role as academic advisor. As the Coull report mentioned, students were frustrated by incomplete and contradictory advising they received from faculty. Dykes, who had graduated from ENST in 2007, brought detailed knowledge about the curricula and the numerous problems that faculty needed to address. Dykes also proved highly effective in using social media, especially Facebook, to
form a virtual community of students and former students. Dykes also served as advisor to the Environmental Programs Involvement Committee (EPIC), a student organization that provides leadership opportunities through service projects and social events for ENGS and ENST students.

Christian Brannstrom, tenured in Geography, replaced Collins in August-September 2014, continuing Collins’ efforts on assessment, recruitment, and program management. Brannstrom used the Collins’ database of former students to develop a Careers Panel (December 2014 and May 2015) and recruited additional instructors for GEOS 405.

By Spring 2015, two of the environmental programs in the College of Agriculture and Life Sciences had developed strong student enrollment with 260 students enrolled in the Bioenvironmental Science program and 57 students enrolled in Environmental Studies. These degrees are not included in this program review.

b. Program Mission and Goals

The BS in Environmental Geosciences provides students with interdisciplinary undergraduate educational opportunities in the environmental sciences. Emphasis is placed on a particular environmental theme and appropriate technical skills. Students are prepared for employment opportunities in the State of Texas and beyond, and for graduate study. The degree program provides the intellectual and technical foundations to become environmentally aware citizens. The goals of the ENGS degree program are to prepare students for employment opportunities in the State of Texas and beyond and to prepare students for research-oriented and professional graduate programs.

The BS in Environmental Studies provides students with interdisciplinary undergraduate educational opportunities at the interface of environmental social science and earth science-based environmental science. Students are prepared for employment opportunities in the State of Texas and beyond, and for graduate study. The degree program provides the intellectual and technical foundations for students to become environmentally aware citizens. The goals of ENST degree program are that students are prepared for employment
opportunities in the State of Texas and beyond and students are prepared for research-oriented and professional graduate programs.

c. Administrative Structure

The ENVP program director, tenured in one of the academic departments of the College of Geosciences, is accountable to the Dean. The program director oversees a program coordinator, who is immediately supervised by the College’s senior academic advisor. The program coordinator supervises a student worker, ~10 hours per week, who is tasked with handling confidential student files, helping organize the office and providing support for events. The student worker prepares files for the program coordinator to meet with students and updates records regarding changes of major and prospective students. The student worker has completed FERPA training because of close contact with student records.

The program director’s duties are included in the Appendix D and are summarized below. Brannstrom is tenured in Geography and his full CV is included in Appendix K.

Duty: Leadership (20%): Performs strategic planning; represents program to administration; defines development priorities. This includes representing ENVP at College executive committee meetings.

Duty: Hiring, Professional Development (10%): Conducts performance reviews; recognizes staff through rewards and awards.

Duty: Academic Administration (35%; records, scheduling): Oversees assessment, class scheduling, and recruitment efforts. This includes representing ENVP at College-level curriculum committee meetings.

Duty: Teaching/Research/Professional (35%): Teaching, research, mentoring, professional activities.

The program coordinator’s duties are included in Appendix D and are summarized here with most recent performance goals, established in October 2014 in response to university-wide mandate. Appendix D also includes the resume of the current program coordinator, Emily Dykes. She has won several recent university- and college-level awards, such as the 2014 Fish Camp Namesake and the 2014 President’s Advising Award.

Duty: Management (40%; program resources and effectiveness):
Performance Goal: Create budget and spending goals for operating budget; attend professional development meeting once per semester; seek appropriate opportunities to invest course fee account funds; organize the ENVP tailgate in fall semester.

Duty: Academic (25%; advising):
Performance Goal: conduct 3–6
advising workshops in academic year; maintain high advisor ratings (>4.5 out of 5.0) on ENGS and ENST exit survey.

**Duty: Development (15%; records, scheduling):** Performance Goal: work with Director to develop cornerstone course, per ENVP strategic plan; work with Director to develop a board of former students; support EPIC.

**Duty: Expansion and Recruiting (10%; communication, recruitment):** Performance Goal: manage and enhance social media presence; support College recruitment director’s efforts with high schools and community colleges (e.g., Lee College); work with Associate Dean for Undergraduate and Faculty Affairs to encourage transfer students.

**Duty: Strategic Planning (5%; internships, high impact):** Performance Goal: Increase information flow about study abroad opportunities to students; manage internship program.

**Duty: Other (5%; as assigned):** Performance Goal: Support College functions as assigned.

The Advisory Committee (EPAC) includes one elected environmental faculty member from each department, the director, and elected student representatives (Appendix C). EPAC, created during the “reform” period, advises the director and environmental faculty on planning, recruitment, and outreach, in addition to other matters such as program assessment. Normally two or three EPAC meetings are held each semester. One meeting each semester, normally at the end of the teaching term, is held for environmental faculty. Current EPAC members are noted in Chapter Three.

### d. Program Resources

#### Administrative Space

ENVP facilities include staff office space in the O&M Building, used by the program coordinator and student worker (105), and a small meeting room (109). This space was assigned to ENVP during the Millington period of reforms in 2006–08. For several years, ca. 2008–2014, the ENVP Director’s office was located on the second floor of O&M. In August 2014, incoming Director Christian Brannstrom opted to locate the director’s office in his Geography office, 202B CSA, and converted the graduate student suite (202A) into the ENVP study lounge. This move aimed to address a longstanding concern among students that they had no space for group work, socializing, or breaks between classes.

#### Laboratory Space

Students in the ENGS and ENST degree programs frequently use laboratory facilities of College faculty for research hours (491) and the capstone course, GEOS 405. Examples include lab spaces of Dr. Shari Yvon-Lewis in O&M 412 and O&M 511,
which include the following:

- Gas Chromatograph/Mass Spectrometer/ECD/FID (Agilent 6890/5973N) – automated with cryotrapping sampling inlet module for atmospheric and headspace sampling
- Gas Chromatograph/Mass Spectrometer (Agilent 7890/5975) – automated with cryotrapping purging and trap module for discrete aqueous samples or headspace analysis
- Coulometric Dissolved Inorganic Carbon Analyzer (VINDTA-3C – similar to a SOMMA)
- 2 alkalinity titration systems
- Lab-built automated underway air and surface seawater measurement system using a Picarro – CO₂/CH₄ detector
- Equilibrators (2 large and 2 small) for underway surface water trace gas sampling
- 4 NDIR CO₂ analyzers

ENST and ENGS students have conducted research (coded as OCNG 491; see Table 13) using the Gas Chromatograph/Mass Spectrometer/ECD/FID (Agilent 6890/5973N) automated with cryotrapping sampling inlet module for atmospheric and headspace sampling. Four ENVP students used the lab-built automated underway air and surface seawater measurement system with a Picarro – CO₂/CH₄ detector to collect data for their capstone course, GEOS 405.

Students also regularly use the lab space of Dr. Brendan Roark and the Stable Isotope Geosciences Facility (SIGF) (described below) in O&M 406, 403, 309, and 815 for the capstone course, GEOS 405, research hours (491), and as part of their participation in
the TAMU Undergraduate Research Scholars Program (UGR Scholars) (http://hur.tamu.edu/Undergraduate-Research/Undergraduate-Research-Scholars).

UGR Scholars engage in a yearlong research project conducted under the supervision of a faculty mentor that culminates in a written thesis. The objective of the program is to involve qualified undergraduate students in a research project that emulates the “graduate student” experience and to introduce the student to the academic publication process and the scholarly community. Dr. Roark’s lab also maintains a large suite of field and laboratory equipment available for GEOS 405 and undergraduate research projects by ensuring all equipment is operational and calibrated correctly and by training users in the correct and safe use of the equipment. Equipment has been purchased by the ENVP programs, faculty start-up funds or by ENVP faculty writing internal high-impact proposals (HIPs) (see Table 1-1). Examples include water quality measurements, monitoring and sampling equipment in fresh and salt water environments (e.g., YSI meters, current meters, filtering apparatus), forestry and soil measurements (e.g., soil moisture probes, sediment and tree corers, DBH tapes), weather and climate measurement (e.g., weather station sensors such as RH, ppt, and temperature with data recorders), sampling equipment (e.g., micromill, saws, ovens, balances) and safety gear. O&M Room 815 was developed to house the equipment, serve as a field staging area and provide a small teaching laboratory as a stop-gap measure while the College develops its teaching laboratory plans (see below). While functional, the space is too small to accommodate all the GEOS 405 projects in any given semester, which limits the GEOS 405 course.

The Stable Isotope Geosciences Facility (SIGF), O&M 406 and 309, was established to provide high quality light stable isotopic measurements for: (1) stable isotope geoscientists (core users) and their students; (2) faculty, research scientists, and students in the College of Geosciences and the larger University community and outside users on a contract basis (as time permits); and most importantly (3) to serve as an educational resource for graduate and undergraduate students. The SIGF consists of three light stable

| Table 1-1. Funded Internal Texas A&M University, College of Geosciences HIP proposal by ENVP faculty. |
|--------------------------------------------------|--------|--------|--------|
| Proposal Title                                    | Pls                | Period   | Award  |
| Enhancing Environmental and Biogeochemistry Research Experiences thru Field- and Laboratory-based Research Projects. | Roark, Grossman, Slowey | 2014-2016 | $45,000 |
| Enhancing Research Intensive Capstone Courses with more Fieldwork | Roark, Frauenfeld, Quiring, Houser, Klein, Lafon, Collins | 2012-2014 | $61,000 |
isotope ratio mass spectrometers (IRMSs) and six peripherals with the capabilities of performing high precision H, C, N, O, and S analyses on carbonates, sediments, waters, and organic material. The current configuration includes a ThermoElectron MAT253 with a Kiel IV for carbonate mineral analyses, a ThermoFinnigan DeltaPlusXP with an EA, TCEA, and a Gas Bench II for analyses of bulk organic matter, water and carbonate samples and a Finnigan MAT252 with a GC-C-IRMS interface and an EA for compound-specific C isotope analyses and bulk organic matter. The SIGF also includes a new Picarro L2130i Cavity Ring-Down Spectroscopy H₂O isotopes analyzer capable of high precision liquid and vapor analyses in both laboratory and field environments. Day-to-day operation of the SIGF is managed by a senior lab manager supported by a team of graduate and undergraduate students.

Two ENVP faculty, EC members, and regular instructors of GEOS 405 run SIGF. Dr. Brendan Roark serves as Director and Dr. Ethan Grossman as a Core Executive Committee member. As a consequence ENVP students have been at the core of SIGF’s educational mission with a large number of ENVP students using SIGF as part for the capstone course, GEOS 405, research hours (491), UGR Scholars program and as a training ground as student research technicians. Over the last six years 13 ENVP students have been employed as student research technicians, and most have done research projects in SIGF (Table 1-2). Nine of the 11 students who have graduated either found employment or were admitted to graduate programs in Earth and Environmental Sciences fields within six months of graduating. Each of these students has reported back that the work and research experiences at SIGF were instrumental in receiving their job or admissions offer. ENVP student research projects in SIGF have been equally successful with one (K. Miller) winning a 2014–15 Texas Sea Grant Undergraduate Scholar Award for project “Aragonite saturation state and deep-sea coral distribution in the Northwest Hawaiian Islands,” ($1,000), which included
the student participating in a 28-day research experience aboard the R.V. *Sikuliaq* in Fall 2014, and another student turning her undergraduate research project into an MS thesis on the biogeochemistry of growth bands in deep-sea corals (L. Mohon).

The International Ocean Discovery Program (IODP), an international research collaboration that coordinates seagoing expeditions to study the history of the Earth recorded in sediments and rocks beneath the ocean floor, also provides scientific benefits to our program. Students in our capstone course, GEOS 405, have used the XRF Core Scanning Facility in the Ocean Drilling and Sustainable Earth Sciences (ODASES) Laboratory and IODP ocean sediment cores for projects looking at discrete and diffuse volcanic ash layers in Caribbean, carbonate crashes associated with the closing of the Isthmus of Panama and the terrestrial input of sediments along the California Margin associated with glacial-interglacial cycles. Each of these GEOS 405 projects have to lead to individual students doing additional research as 491 hours.

It also bears pointing out that both ODASES and SIGF laboratories support these research activities gratis or in limited instances at a minimal cost-recovery model. In addition IODP staff scientists routinely support independent research projects (491 hours), and we are developing a program by which IODP staff scientists teach individual research teams in

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Year graduated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madison Metsker-Galarza</td>
<td>ENGS</td>
<td>Senior</td>
</tr>
<tr>
<td>Samantha Jorden</td>
<td>ENGS</td>
<td>Senior</td>
</tr>
<tr>
<td>Kelci Miller</td>
<td>ENST</td>
<td>2015</td>
</tr>
<tr>
<td>Kendra Fansworth</td>
<td>ENGS</td>
<td>2014</td>
</tr>
<tr>
<td>Robyn Freitas</td>
<td>ENGS</td>
<td>2014</td>
</tr>
<tr>
<td>Destiny Winning</td>
<td>ENGS</td>
<td>2013</td>
</tr>
<tr>
<td>Samantha Kuykendall</td>
<td>ENGS</td>
<td>2013</td>
</tr>
<tr>
<td>Jessica Robertson</td>
<td>ENGS</td>
<td>2012</td>
</tr>
<tr>
<td>Hannah Powers</td>
<td>ENST</td>
<td>2012</td>
</tr>
<tr>
<td>Beth Stockert</td>
<td>ENST</td>
<td>2012</td>
</tr>
<tr>
<td>Hannah Miller</td>
<td>ENST</td>
<td>2010</td>
</tr>
<tr>
<td>Leslye (Mitty) Mohon</td>
<td>ENGS</td>
<td>2010</td>
</tr>
<tr>
<td>Krista Burns</td>
<td>ENST</td>
<td>2010</td>
</tr>
</tbody>
</table>

GEOS 405 with the goal of eventually having an entire IODP GEOS 405 section. One idea under development is to have such a section be a part of a full IODP site reanalysis program of old cores that have potential for additional higher level research that would include core complete core
descriptions (e.g., physical properties, mineralogy, elemental and isotopic analysis, and fossil descriptions).

Students in our program have also used facilities at the Geochemical and Environmental Research Group (GERG), which focuses on applied interdisciplinary research in the ocean and environmental sciences. GERG is organized as three interrelated groups that provide field acquisition, analyses, and interpretation of data across several interlocking themes in environmental sciences, ocean sciences, and resource geosciences.

Currently, we lack teaching laboratory facilities for working with water and low-temperature chemistry, which influences how faculty teach courses on ENGS and ENST degree plans, such as GEOL 420 (Environmental Geology), GEOG 331 (Geomorphology), GEOG 434 (Hydrology and Environment), and GEOS 405 (capstone). The Dean created a task force in 2014, but their recommendations for finding space in either Halbouty or O&M Buildings have not yet been implemented.

An important new development is the Robert O. Reid Ocean Observing Educational Facility, Room 602 in O&M, which provides state-of-the-art audio and video technology to stream and view live environmental data, graphics, and other representations. The facility will serve the ENVP by providing access to environmental, oceanographic, and atmospheric data, video, and numerical-model outputs from around the world and will provide a common meeting room for students to view data, meet with faculty, and discuss environmental processes with faculty and fellow students. The room has eight 55" 1080p high-definition (HDMI) display panels that make up a video wall that measure 16’x4’. The screen is controlled with Matrox controllers and software and specialized computer hardware that allow a wide range of versatility and flexibility to display and stream content. The room is also equipped with state-of-the-art surround sound capability. Beginning in Fall 2015, the room is intended to be used for courses including GEOS 405 and GEOS 470.

Financial Resources
ENVP financial resources include three main accounts. First, an Operating Account (Table 1-3) supports maintaining the program coordinator’s office, the student worker’s salary, Table 3. Summary of expenditures charged to the operations account from 1 September 2014 to 1 July 2015.

<table>
<thead>
<tr>
<th>Operations (241510)</th>
<th>Charges ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office 105</td>
<td>3,189</td>
</tr>
<tr>
<td>Student worker</td>
<td>2,691</td>
</tr>
<tr>
<td>Student support</td>
<td>598</td>
</tr>
<tr>
<td>Program Development</td>
<td>3,732</td>
</tr>
<tr>
<td>Promotional</td>
<td>1,167</td>
</tr>
<tr>
<td>Program Coordinator</td>
<td>3,649</td>
</tr>
<tr>
<td>Program Director</td>
<td>388</td>
</tr>
<tr>
<td>Fees</td>
<td>15</td>
</tr>
<tr>
<td>Subtotal</td>
<td>15,429</td>
</tr>
</tbody>
</table>
professional development for the program coordinator, and funding program development activities. Office 105 expenses refer to office supplies, computer, printer, telephone, and other expenses necessary to maintain the program coordinator’s office. Program Development includes expenses for Career Panel, recruitment, and Fall Tailgate. Expenses for high-impact learning experiences (HILEs) are for course-related travel and equipment, mainly for GEOS 405 but also for other courses enrolling ENGS and ENST students that generate expenses not covered by other accounts. Promotional expenses are for clothing, fliers, and posters used to promote our programs. Student support refers to scholarships that we award for competitive applications.

Second, a Course Fee Account (Table 1-4) funds high-impact student learning activities and program development activities. Both activities potentially benefit all students enrolled in ENST and ENGS, pertaining mainly to equipment and expenses relating to GEOS 405, the capstone course, and other high-impact activities such as the Career Panel, Climate Change Forum, Environmental Films, and field trip to the TAMU Law School. In 2014 we paid the stipend for a graduate assistant-non-teaching (GANT) to support GEOS 105. Expenses for 2014–15 are presented in Table 1-4.

Third, a Graduate Assistant-Teaching (GAT) Account supports a GAT employed for GEOS 405. The GAT is a student in one of the academic departments. This account pays for the stipend, which is normally $1,700/month for PhD students, while the academic department normally pays tuition (~$2,100/semester for 9 credit hours).

Overall, these financial resources are considered sufficient to maintain ENVP and support program development efforts considered necessary to increase student enrollment and student retention.

Salary for the program director, who carries a 12-month appointment, was compressed into 11 months in October 2014 according to campus-wide reforms and is paid from the Dean’s Office, not the home academic department. The most recent appointment term for the Program Director is four years with expectations that a reduced teaching load (approximately three courses per year) and increased service and leadership

<table>
<thead>
<tr>
<th>Table 1-4. Summary of expenditures charged to the Course Fee account from 1 September 2014 to 1 July 2015.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Fee (2415975)</strong></td>
</tr>
<tr>
<td>Student support</td>
</tr>
<tr>
<td>Program Development</td>
</tr>
<tr>
<td>GANT (Teaching Assistant)</td>
</tr>
<tr>
<td>Fees</td>
</tr>
<tr>
<td>Program Director</td>
</tr>
<tr>
<td>HILE equipment</td>
</tr>
<tr>
<td>HILE travel</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
</tr>
</tbody>
</table>
role will be directed primarily toward the College, rather than the home academic department.

**e. Date of Last APR External Review**

The Environmental Programs in the College of Geosciences have not been reviewed formally by an outside panel. However, the 2008 Coull report, commissioned by Dean Kjerfve, contained recommendations summarized above in section 1-a. The full report is included as Appendix C: Program Reforms. As indicated above, it recommended implementing the “no-money-changes-hands” Model 2, reforming the curricula, appointing permanent director, and hiring an academic advisor. Model 2 was partly implemented, while the other recommendations have been fully implemented.

**f. Analysis**

The ENVP strategic plan, presented verbatim below, was developed in 2014 by Collins in consultation with EPAC. We believe it is well aligned with the College’s strategic plan, especially as regards high-impact learning activities, recruitment, and retention of students, professional degrees, and skill development. We have already implemented some items listed in the strategic plan, such as (1) developing an ad hoc advisory group, comprising former students whom we invite as career panelists, and (2) implementing a recruitment strategy that targets high school students who have taken AP Environmental Science and community colleges with Environmental Science associate’s degrees. However, we have delayed implementing the junior capstone course because we first needed to ensure that instruction of the senior capstone course, GEOS 405, had a sustainable basis among faculty.

**Vision**

The vision is to make the Environmental Programs in Geosciences the leading provider of environmental education at Texas A&M University within the five-year span of this plan, and to position it as a leading interdisciplinary undergraduate environmental program with its base in the geosciences.

**Mission**

The current mission of the ENVP is to mobilize the expertise in Atmospheric Sciences, Geology, Oceanography, and Physical and Human Geography in the College of Geosciences to deliver interdisciplinary undergraduate environmental education opportunities that prepare students for the environmental workforce and for appropriate graduate school opportunities. If the Programs were to widen its education remit or be given other roles in the College of Geosciences, this mission statement would require revision.
Values
The Programs will continue to foster a culture of scholarly excellence while honoring the principles of academic freedom. We recognize that, as a state university, we exist to serve the people of the State of Texas and have the responsibility to try to improve the lives and environment of all Texans. We also recognize the diversity of the people who may wish to work and study within the Programs, and will not discriminate in any form.

SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enthusiastic and interested faculty</td>
<td>Reliance on director</td>
</tr>
<tr>
<td>Stable and manageable enrollment</td>
<td>Continued challenge of covering GEOS courses</td>
</tr>
<tr>
<td>To date, successful model of relying on faculty volunteers for course scheduling</td>
<td>Classroom availability and lack of any rooms with ENVP priority</td>
</tr>
<tr>
<td>High proportion of majors from under-represented groups (c. 25%) and high proportion female (&gt;50%)</td>
<td>Difficulty aligning scheduling of GEOS and required and elective courses outside the control of the Programs</td>
</tr>
<tr>
<td>Expanding connections with former students as alumni population grows rapidly</td>
<td>Workload pressure on Program Coordinator</td>
</tr>
<tr>
<td>Approved 3+2 program with OCNG likely help with recruitment of strong students</td>
<td>No specific environmental MS program</td>
</tr>
<tr>
<td>Not a cross-campus interdisciplinary program</td>
<td>Not a cross-campus interdisciplinary program</td>
</tr>
<tr>
<td>Support of current Dean</td>
<td>Environmental degrees are generally not specialized</td>
</tr>
</tbody>
</table>

| Opportunities                                | Threats                                                                     |
|----------------------------------------------|                                                                            |
| Continued population growth of former students and their advancement within companies and agencies to positions of greater influence | Increased profiles of current and new competing undergraduate environmental programs may affect enrollments. The newly established Environmental Business degree is of particular concern. |
| Creation of additional 3+2 programs, perhaps initially with GIST | Loss of key faculty and staff                                              |
| Appointment of new faculty with dual affiliations (i.e., a department and the Programs) | Emphasis on SCH’s could discourage offerings of specialized courses that are important theme electives. |
| Increased value-added experiences in the Programs (viz: undergraduate research, study abroad, fieldwork, and internships) | Competing environmental degrees in Texas                                   |
| Source of well-trained majors for College’s MS programs. | Increased admissions in Engineering needed to meet enrollment goals may impact ENGS. |
| Environmental concerns such as water availability are likely to receive increasing attention in the coming years and decades. | Some prospective and current ENGS and ENST majors likely to shift to new GIST program. |
Critical Issues
How to increase availability of GEOS 405 and further diversify its structure to provide opportunities for study abroad. We have been running near capacity, which often limits availability only to those in their final semester prior to graduation.

How to increase offerings and availability of Geosciences courses with significant policy content. This situation has recently worsened as we have not been able to offer GEOS 430 – Science and Politics of Climate Change and GEOS 444 – Science and Politics of Climate Change, both of which consistently fill to (or past) capacity.

How to offer new courses or modify current ones to offer more hands-on, practical, and career-oriented education. Our students frequently identify this deficiency as negatively impacting their post-graduation job opportunities.

How to advertise and nurture the recently approved 3+2 joint program with Oceanography to ensure it succeeds. This program is expected to increase interest and enrollment in ENGS, student motivation and GPAs to meet the entry requirements, and SCH, and especially WSCH, as a new pool of self-funded MS-level students take courses in the College.

How to increase participation in our two current and one approved minors. These increase enrollment in Geosciences courses and may also increase the number of change of majors into ENVP or other GEOS departments.

How to tailor student coursework and preparation for specific careers or specific graduate/professional programs. The flexibility offered in ENGS and ENST is among its greatest appeals to many students, yet this flexibility often leaves graduates without the foundation required for many entry-level jobs and graduate
programs.

How to provide more opportunity for students to participate in internships and how to compel them to take advantage of that opportunity.

How to encourage faculty to engage more ENST and ENGS students in undergraduate research.

How to better engage faculty and academic advisors to ensure course offerings and capacity are aligned with the needs of the ENST and ENGS students.

How to use the diverse expertise available among the college faculty to effectively advise our diverse student population.

How to reduce the workload on the program coordinator to free up time to initiate new efforts.

Goals

Have combined ENGS/ENST enrollment from 5 to 25% above that in 2014 while increasing the percentage of those students who enter the program because of their excitement for the field and decreasing that of those students who enter because of their lack of excitement for any other. Progress to be assessed using cumulative GPA while in major.

Have at least 80% of all students participate in study abroad, an internship, and/or undergraduate research before graduation. Self-reported participation among 2013 graduates was about 60%.

Have at least 20% of all graduates enter directly into graduate or professional school. The specialization offered through graduate study nicely complements the broad foundation provided by of our degrees, which alone can limit career opportunities.

Enhance formal and informal ties with ENVP alumni and regional employers to improve student preparation and ENVP curricula.

Develop at least one 3+2 program similar to the recently approved initiative between ENGS and OCNG. This would likely again be within the College, but partnerships with, for example, Environmental and Occupational Health or Civil Engineering might also be pursued.

Action Plan: Short Term

Develop structure and prepare initial content for page on the ENVP website designed to encourage participation in high-impact educational practices.

Develop syllabus for planned junior-level cornerstone course that would be directed at career and graduate school preparation and planning.

Establish external advisory council and invite selected alumni to serve.

Establish network of faculty advisors with defined areas of specialization.
**Action Plan: Mid term**
Identify most feasible 3+2 program and work to develop proposal and communicate plan to impacted faculty.

Require all ENGS and ENST students to meet with at least one faculty advisor each year.

Offer junior-level cornerstone course.

Begin informal seminar program in which selected alumni are invited to meet with groups of students and give career-focused seminars.

Identify and target for recruitment high schools offering AP Environmental Science and community colleges offering GEOS 105 equivalent.

**Action Plan: Long term**
Submit 3+2 program proposal for approval.
Chapter 2. Academic Programs and Curricula

a. Programs Offered

Environmental Programs in Geosciences oversees undergraduate BS degrees in Environmental Studies (ENST) and Environmental Geosciences (ENGS). Degree plans are presented in Appendix E: Degree Plans and summarized in Table 2-1.

Table 2-1. Summary of Environmental Geosciences and Environmental Studies 120-hour degree plans.

<table>
<thead>
<tr>
<th>Curricular Category</th>
<th>Environmental Geosciences (ENGS)</th>
<th>Environmental Studies (ENST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core (18 hours common)</td>
<td>8 hours introductory geosciences courses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEOS 105, 405</td>
<td>GEOG 205 or GEOS 210</td>
</tr>
<tr>
<td></td>
<td>GEOG 330</td>
<td>GEOG 335 Biogeography</td>
</tr>
<tr>
<td></td>
<td>1 hour seminar</td>
<td>GEOG 380 Env Workshop</td>
</tr>
<tr>
<td>Core (different between ENGS and ENST)</td>
<td>GEOS 470 Data Analysis GEOL 420 Environmental Geology</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>MATH 151, 152 (Engineering Math)</td>
<td>MATH 141, 142 (Business Math)</td>
</tr>
<tr>
<td>Science</td>
<td>Biology (8 hours), Chemistry (8 hours)</td>
<td>Biology and/or Chemistry (8 hours)</td>
</tr>
<tr>
<td></td>
<td>Physics (4 hours)</td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
<td>STAT 303</td>
</tr>
<tr>
<td>Geosciences Electives</td>
<td>Included in Environmental Themes</td>
<td>6 hours</td>
</tr>
<tr>
<td>Technical Electives</td>
<td>GEOG 390 +10 hours</td>
<td>GEOG 390 + 3 hours</td>
</tr>
<tr>
<td>Environmental Policy</td>
<td>6 hours from list</td>
<td>24 total (15 required, 9 hours from list)</td>
</tr>
<tr>
<td>Environmental Theme</td>
<td>18 hours in 1 of 5 Themes</td>
<td>None</td>
</tr>
<tr>
<td>Free Electives</td>
<td>None</td>
<td>9 hours</td>
</tr>
<tr>
<td>Internship (484) and Research Credit (291, 491)</td>
<td>Yes: Environmental Policy, Theme or Technical Elective</td>
<td>Yes: Environmental Policy, Geosciences or Technical Elective</td>
</tr>
</tbody>
</table>
b. Program Curricula

Environmental Studies (ENST) and Environmental Geosciences (ENGS) undergraduate degree programs mainly rely on existing curricula in Atmospheric Sciences, Geography, Oceanography, and Geology and Geophysics. Some Geosciences (GEOS) courses are required. Both degree programs are 120 hours with required and elective courses. Electives are listed on degree plans. ENGS allows no free electives, while ENST allows for nine hours of free electives.

The Environmental Geosciences (ENGS) curriculum requires engineering math, more science, and concentrated courses in one of several tracks. The program includes 24 hours of core Geosciences courses: eight hours of introductory courses in Atmospheric Sciences, Geography, Geology, or Oceanography; three hours in Geosciences 105 (Introduction to Environmental Geosciences), created for ENGS and ENST; three hours in Geosciences 405 (Environmental Geosciences), a capstone course created for ENGS and ENST; three hours in Geosiences 410 (Environmental Geosciences); three hours in GEOL 420 (Environmental Geology); three hours in GEOG 330 (Resources and Environment); and one hour seminar.

Math and science requirements for ENGS (31 hours) include eight hours of Engineering Math, three hours of Statistical Methods, eight hours of Biology, eight hours of Chemistry, and four hours of Physics.

ENGS requires 14 hours of Technical Electives, a category that includes, GIS, remote sensing, field geography, and geologic field methods. Six hours of Environmental Policy electives are required; this category includes courses in the College of Geosciences, such as Geography of Energy and Political Geography, and courses outside the College, such as U.S. Environmental Regulations (BESC 367), Environmental Philosophy (PHIL 314), and Environmental and Resource Economics (AGEC 350).

Finally, 18 hours are required for ENGS students to focus on one of five environmental themes. Each theme requires six to eight hours of required courses, then approximately ten hours of electives, mostly offered in the College of Geosciences. The Climate Change theme requires GEOS 210 (Climate Change) and GEOS 410 (Global Change) or GEOS 444 (Science and Politics of Global Climate Change). The Water theme requires Hydrology and Environment (GEOG 434) and Hydrogeology (GEOL 410). The Human Impact on Environment theme requires GEOS 430 (Global Science and Policy Making) and GEOG 430 (Environmental Justice). The Coastal and Marine Environment theme requires Coastal Processes (GEOG 370) and a 400-level Oceanography course. The Biosphere
theme requires GEOG 335 (Patterns and Processes in Biogeography), Paleobiology (GEOL 305), and Biological Oceanography (OCNG 420).

ENST, which originated in 1973 as the Environmental Studies Option in Geography, requires coursework in GIS, business math, a few science hours, and more social science and policy courses compared to ENGS. It has no specialized tracks.

The ENST program requires 30 hours of Core Environmental Science Courses, several of which overlap with ENGS requirements: eight hours of introductory courses in Atmospheric Sciences, Geography, Geology, or Oceanography; three hours in Geosciences 105 (Introduction to Environmental Geosciences), created for ENGS and ENST; three hours in Geosciences 405 (Environmental Geosciences), a capstone course created for ENGS and ENST; and three hours in GEOG 330 (Resources and Environment). In addition, ENST students must take Introduction to Human Geography (GEOG 201) Environmental Change or Climate Change (GEOG 205 or GEOS 210), Biogeography (GEOG 335), Environmental Workshop (GEOG 380), and one hour of either GEOS 101 Freshman Seminar or GEOS 481 Senior Seminar.

ENST students take business math (six hours), eight hours of science (Biology or Chemistry), and three hours of Statistical Methods.

We require ENST to take GIS (GEOG 390) and an additional three hours of technical elective, such as remote sensing, GPS, or field geography.

ENST students must take 24 hours of Environmental Policy electives, for which we require Environmental and Resource Economics (AGEC 350), Economic Geography (GEOG 304), Global Science and Policy Making (GEOS 430), Environmental Philosophy (PHIL 314), and Environmental Impact Assessment (RENR 470). As a College, we have faced difficulties in teaching Global Science and Policy Making and in obtaining access for our students in RENR 470.

Many courses required on degree plans are taught regularly and present no challenges at present. We code courses according to the criteria established in Table 2-2, which in turn are present in the degree plans (Appendix E: Degree
<table>
<thead>
<tr>
<th>Code</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQ</td>
<td>Required for ENGS or ENST</td>
</tr>
<tr>
<td>Policy Elect</td>
<td>Policy Elective (ENGS and ENST)</td>
</tr>
<tr>
<td>Tech Elect</td>
<td>Technical Elective (ENGS and ENST)</td>
</tr>
<tr>
<td>Coastal</td>
<td>Coastal Theme (ENGS)</td>
</tr>
<tr>
<td>Bio</td>
<td>Biosphere Theme (ENGS)</td>
</tr>
<tr>
<td>Water</td>
<td>Water Theme (ENGS)</td>
</tr>
<tr>
<td>Human</td>
<td>Human Impact on Environment (ENGS)</td>
</tr>
<tr>
<td>Climate</td>
<td>Climate Change Theme (ENGS)</td>
</tr>
<tr>
<td>Geos Elect</td>
<td>Geosciences Elective (ENST)</td>
</tr>
</tbody>
</table>

| Critical   | Required for ENGS or ENST        |
| Essential  | Required within elective areas   |
| Desirable  | Recommended as elective          |

Tables 2-3 through 2-7 show “Critical,” “Essential,” and “Desirable” courses in each academic department and in the Geosciences. The order of the listing follows the relative production of student credit hours (SCH), which we present in the next section. Geography, for example, carries numerous courses required for either ENGS or ENST, or both—these are coded as “Critical” because if they are not offered, students may have increased time to degree or we may need to allow substitutes that lower the intellectual coherence of the
degree. “Essential” courses are listed as electives on degree plans, and we need departments to offer these courses at least once per year. “Desirable” courses are also on electives list but are typically more easily substitutable than “Essential” courses. Complete data, showing the name of instructor of record for these courses, are presented in Appendix F.

Geosciences courses considered “critical” include GEOS 105, offered each semester because of the number of students seeking ENGS and ENST (Table 2-4). GEOS 405 is also “critical” because students normally seek this course in their final semester. The course is writing-intensive and problem-based, so enrollment is normally limited to ~20 students. Given student demand, we now must offer two or three sections a semester. Some sections have included an overseas field trip. One major concern is that we have not been able to offer a required course, GEOS 430, for several semesters. The content of this course is extremely important to our majors because of the science-policy linkages in our assessment documents. We also have demand for GEOS 444 (Science and Politics of Climate Change), last offered in Spring 2014.

Our key concern in Geology (Table 2-5) is the irregular offering of GEOL 420, required for ENGS majors. Other Geology courses have been offered regularly, but ENGS students

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>2013C</th>
<th>2014A</th>
<th>2014C</th>
<th>2015A</th>
<th>2015C</th>
<th>ENGS</th>
<th>ENST</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td>Intro Environmental</td>
<td>ATMO</td>
<td>OCNG</td>
<td>GEOG</td>
<td>OCNG</td>
<td>GEOG</td>
<td>REQ</td>
<td>REQ</td>
</tr>
<tr>
<td>210</td>
<td>Climate Change</td>
<td>ATMO</td>
<td>ATMO</td>
<td></td>
<td></td>
<td></td>
<td>Climate req</td>
<td>Core Elect</td>
</tr>
<tr>
<td>401</td>
<td>Polar Regions Earth</td>
<td></td>
<td>OCNG</td>
<td></td>
<td>OCNG</td>
<td></td>
<td>Climate, Water</td>
<td>Geos, Policy Elect</td>
</tr>
<tr>
<td>405</td>
<td>Environmental Geos</td>
<td>GEOG</td>
<td>ATMO</td>
<td>ATMO</td>
<td>ATMO</td>
<td></td>
<td>OCNG(2)</td>
<td></td>
</tr>
<tr>
<td>410</td>
<td>Global Change</td>
<td>OCNG</td>
<td>OCNG</td>
<td>GEOG</td>
<td>GEOG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>489</td>
<td>Special Topics In.</td>
<td>ATMO</td>
<td>OCNG</td>
<td></td>
<td></td>
<td></td>
<td>Human Req</td>
<td>REQ</td>
</tr>
<tr>
<td>430</td>
<td>Global Sci &amp; Policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Human req</td>
<td>REQ</td>
</tr>
<tr>
<td>442</td>
<td>Past Climates</td>
<td>GEOG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Climate, Bio Elect</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>444</td>
<td>Sci &amp; Politics Clim Change</td>
<td>ATMO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Climate req, HIE elect</td>
<td>REQ</td>
</tr>
<tr>
<td>470</td>
<td>Data Methods</td>
<td>OCNG</td>
<td>OCNG</td>
<td>OCNG</td>
<td>OCNG</td>
<td>OCNG</td>
<td>REQ</td>
<td></td>
</tr>
<tr>
<td>481</td>
<td>Seminar</td>
<td>OCNG,</td>
<td>OCNG</td>
<td>OCNG</td>
<td>OCNG</td>
<td>OCNG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2-4. Critical, essential, and desirable Geosciences course offerings for ENGS and ENST Geosciences course offerings relevant to ENGS and ENST. Dark cells indicate course was taught or planned to be taught; departmental code indicates appointment of instructor.
have difficulty enrolling because of high demand from students seeking Geology degrees.

In Oceanography, we have no immediate problem with curricular offerings, listed in Table 2-6. Students in Environmental Studies frequently do not have the required prerequisites for the OCNG course because they do not have the required sciences and math. If an ENST student wishes to complete an OCNG minor, they typically must take 3-6 hours of OCNG 491 (research) to meet the required number of hours for a minor. ENGS students, on the other hand, have sufficient science to meet the prerequisites for all OCNG courses, except OCNG 410 Physical Oceanography, and could therefore meet the OCNG minor without needing to participate in research. However, because of limited course offerings and due to the fact that most ENGS students are interested in lab work, ENGS students will frequently participate in OCNG 491 research hours as well. As we note elsewhere, Oceanography faculty teach many students in research hours (OCNG 491), because students seeking the Oceanography minor must take OCNG coded courses.

In Atmospheric Sciences, we have no immediate problem with curricular

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>2013C</th>
<th>2014A</th>
<th>2014C</th>
<th>2015A</th>
<th>2015C</th>
<th>ENGS</th>
<th>ENST</th>
</tr>
</thead>
<tbody>
<tr>
<td>410</td>
<td>Hydrogeology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Water Req</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>305</td>
<td>Paleobiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bio Req</td>
<td></td>
</tr>
<tr>
<td>306</td>
<td>Sed &amp; Stratigraphy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tech Elect</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>309</td>
<td>Geologic Field Methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tech Elect</td>
<td>Tech Elect</td>
</tr>
<tr>
<td>420</td>
<td>Environmental Geology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>REQ</td>
<td>Geos Elect</td>
</tr>
</tbody>
</table>

Table 2-5. Critical, essential, and desirable Geology course offerings for ENGS and ENST. Dark cells indicate course was taught or planned to be taught.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>2013C</th>
<th>2014A</th>
<th>2014C</th>
<th>2015A</th>
<th>2015C</th>
<th>ENGS</th>
<th>ENST</th>
</tr>
</thead>
<tbody>
<tr>
<td>401</td>
<td>Interdisciplinary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coastal, Water</td>
<td></td>
</tr>
<tr>
<td>410</td>
<td>Into to Phys Oceanog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Climate, Coastal</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td>Intro Biological Oceanog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bio</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>425</td>
<td>Microbial Oceanog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coastal, Bio Req</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>430</td>
<td>Intro Geological Oceanog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coastal</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>440</td>
<td>Intro to Chemical Oceanog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coastal</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>350</td>
<td>Marine Pollution Oceanog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coastal, human</td>
<td>Geos Elect</td>
</tr>
</tbody>
</table>

Table 2-6. Critical, essential, and desirable Oceanography course offerings for ENGS and ENST. Dark cells indicate course was taught or planned to be taught.
offerings, listed in Table 2-7. Atmospheric Sciences courses have specific math and science requirements for most of their courses. The courses listed below have prerequisites students in ENGS will meet, and may meet for ENST, and are therefore the only options for ATMO courses. However, ATMO 326 was just recently brought back into the teaching cycle, ATMO 363 is a prerequisite for ATMO 463 and are only taught in one semester a year, and ATMO 464 is rarely offered. ATMO 321 is a computer science based course in which students are exposed to Python software. Since ATMO faculty teach upper level GEOS courses such as GEOS 444 Science and Politics of Climate Change, students are allowed to use upper level GEOS courses to complete their ATMO minor. Without this exception, students would be less likely to meet the minor requirements. Faculty in Atmospheric Sciences normally teach climate change courses coded as GEOS (210 and 444).

As we noted in Program History, the College of Agriculture and Life Sciences offers two BS degrees, Bioenvironmental Science and Environmental Studies. Their Bioenvironmental Science degree is most similar to our Environmental Geosciences degree in that it is based strongly in science courses. Their Environmental Studies is policy based and structured similarly to our ENST. The career outcomes are very similar to our degrees, yet the major coursework varies in subject matter. Students completing degrees in the College of Agriculture and Life Sciences focus on environmental impacts on agricultural systems, such as forest science, soil science, and ecosystem science. By contrast, the environmental degrees in the College of Geosciences focus on the earth systems such as geology, geography, oceanography, and atmospheric science. Therefore, students are encouraged to select a major that contains coursework that interests them the most. Since our College houses the Atmospheric Sciences and Geology departments, we encourage students to complete our degrees if they are interested in air quality, climate change, or geology. Many of the courses in both

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>2013C</th>
<th>2014A</th>
<th>2014C</th>
<th>2015A</th>
<th>2015C</th>
<th>ENGS</th>
<th>ENST</th>
</tr>
</thead>
<tbody>
<tr>
<td>321</td>
<td>Comp App Atmo Sci</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tech Elect</td>
<td>Tech Elect</td>
</tr>
<tr>
<td>326</td>
<td>Environmental Atmos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Geos Elect</td>
<td></td>
</tr>
<tr>
<td>363</td>
<td>Chem &amp; Pollution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Climate Elect</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>463</td>
<td>Air Pollution Metr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Climate Elect</td>
<td>Geos Elect</td>
</tr>
<tr>
<td>464</td>
<td>Lab Meth Atmo Sci</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tech Elect</td>
<td></td>
</tr>
</tbody>
</table>

Table 2-7. Critical, essential, and desirable Atmospheric Sciences course offerings for ENGS and ENST. Dark cells indicate course was taught or planned to be taught.
Colleges will overlap and count in the environmental elective areas for all four degrees. The College of Agriculture and Life Sciences offers more soil- and water-focused science and policy-based courses, some of which our students will take for their degrees.

c. Number of Degrees Awarded

Since 2004 we have awarded 210 ENGS degrees and 185 ENST degrees (Figures 2-1 and 2-2). Men received slightly more degrees than women (50.4% compared to 49.6%). Non-white students represented approximately 22% of the 395 total students awarded ENGS and ENST degrees. We were unable to obtain data on the number of students who completed the ESO in Geography from the mid-1970s through early 2000s, when the option became the ENST undergraduate degree.

Figure 2-1. ENGS Degrees awarded, 2004–2014.
d. Student Credit Hour (SCH) Production and Distribution

We analyzed student credit hour (SCH) production per College department, for the College, and overall, for ENST and ENGS from 2005 to present (Table 2-8, Figures 2-3 through 2-6). These data show the departments in which ENGS and ENST took credit hours, and allow us to compare student credit hours taken in the College compared to outside the College.

Between Fall 2005 and Spring 2014, ENGS students took 23,130 credit hours, of which 53.6% remained in the College of Geosciences, slightly less than ENST students probably because of more math and science requirements taken outside the College. Considering Geosciences SCH, 43.9% were taken as Geography courses, 22.8% as Geosciences courses (including introductory GEOS 105
and capstone GEOS 405), 12.8% as Oceanography, 13.0% as Geology, and 8.1% as Atmospheric Sciences (Figure 2-3). Historical trends on semester-by-semester basis are shown in Figure 2-4. Between Fall 2005 and Spring 2014, ENST students took 18,548 credit hours, of which 57.6% remained in the College of Geosciences. Considering Geosciences SCH, 59.1% student credit hours were taken as Geography courses, 23.1% as Geosciences courses (including introductory GEOS 105 and capstone GEOS 405), 3.9% as Oceanography, 3.7% as Geology, and 2.7% as Atmospheric Sciences (Figure 2-5). Historical trends on semester-by-semester basis are shown in Figure 2-6.

Table 2-8. Student credit hour (SCH) production, 2005–14, for ENGS and ENST.

<table>
<thead>
<tr>
<th></th>
<th>ENGS</th>
<th>ENST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SCH</td>
<td>% CLGE</td>
</tr>
<tr>
<td>ATMO</td>
<td>1,001</td>
<td>8.1%</td>
</tr>
<tr>
<td>GEOG</td>
<td>5,442</td>
<td>43.9%</td>
</tr>
<tr>
<td>GEOL</td>
<td>1,612</td>
<td>13.0%</td>
</tr>
<tr>
<td>GEOP</td>
<td>21</td>
<td>0.2%</td>
</tr>
<tr>
<td>GEOS</td>
<td>2,831</td>
<td>22.8%</td>
</tr>
<tr>
<td>OCNG</td>
<td>1,584</td>
<td>12.8%</td>
</tr>
</tbody>
</table>

|          | SCH  | % CLGE | % TAMU |
| CLGE     | 12,404 | 53.6%   |        |
| TAMU     | 23,130 |        | 18,548 |

Figure 2-3. Department share of ENGS student credit hours taken in the College of Geosciences, 2005–2014.
Figure 2-4. Term-by-term fluctuation in department share of ENGS student credit hours taken in the College of Geosciences, 2005–2014.

Figure 2-5. Department share of ENST student credit hours taken in the College of Geosciences, 2005–2014.
d. Average Time to Degree

The average time to degree is reported in Table 2-9. The likely reason for time to degree exceeding four years is that we receive many transfer and change-of-major students.

e. Academic Enhancements

Present and past directors and faculty have made numerous academic enhancements to ENVP. Our degree is inclusive, as our student demographic data indicate, but our program enhancements allow our top students to enjoy a rigorous experience and

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Table 2-9. Average time to degree (years), ENST and ENGS.

<table>
<thead>
<tr>
<th></th>
<th>ENST</th>
<th>ENGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-07</td>
<td>4.40</td>
<td>4.75</td>
</tr>
<tr>
<td>2007-08</td>
<td>4.81</td>
<td>4.91</td>
</tr>
<tr>
<td>2008-09</td>
<td>4.64</td>
<td>4.23</td>
</tr>
<tr>
<td>2009-10</td>
<td>4.71</td>
<td>4.77</td>
</tr>
<tr>
<td>2010-11</td>
<td>4.33</td>
<td>4.55</td>
</tr>
<tr>
<td>2011-12</td>
<td>4.53</td>
<td>4.42</td>
</tr>
<tr>
<td>2012-13</td>
<td>4.38</td>
<td>4.60</td>
</tr>
<tr>
<td>2013-14</td>
<td>4.35</td>
<td>4.32</td>
</tr>
</tbody>
</table>
develop credentials necessary for success in graduate school. We divide these enhancements between high-impact learning experiences (HILEs) and social activities.

Undergraduate research
Our faculty make undergraduate research available to top students. These credit hours may be coded as either Geosciences or the home department. Oceanography is by far the leading department to supervise research hours (491). This is partly explained by the fact that ENST or ENGS students seeking a minor in Oceanography are required to take courses coded as OCNG. Faculty in any College department may opt to code their research hours in Geosciences (GEOS). ENGS students are over-represented in 491 hours, accounting for more than double the SCH in 491 compared to ENST. This is likely because the higher math and science requirements are more suited to research that Oceanography faculty are willing to supervise. In addition, Oceanography does not have an undergraduate degree program. In terms of directed studies hours, coded as 485, faculty in Atmospheric Sciences have supervised the most SCH, followed by faculty in Geography.

Calls for Support
Another measure of high-impact learning experiences is captured by data for our “calls for support” awards, which total $14,645, made to 36 students (9.1% of our total number of graduates) from Fall 2009 to Summer 2014. To obtain these awards, students submitted an application form (Appendix G), which the Director and EPAC evaluated. Most awards (31) were made to students pursuing study abroad programs, while a far smaller number were awarded for conference presentations (3) and internships (2). Until Fall 2014, we made these awards from Operations and Instructional Enhancement and Education Funds (IEEF) accounts. Currently, we use Operations and Course Fee accounts. We also transitioned into naming these awards as “scholarships.”

<table>
<thead>
<tr>
<th></th>
<th>ENGS</th>
<th>ENST</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATMO</td>
<td>491</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>485</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG</td>
<td>491</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>485</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL</td>
<td>491</td>
<td></td>
</tr>
<tr>
<td></td>
<td>485</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOS</td>
<td>491</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>485</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG</td>
<td>491</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>485</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>330</td>
</tr>
<tr>
<td></td>
<td></td>
<td>640</td>
</tr>
</tbody>
</table>

Table 2-10. 491 (research) and 485 (independent study) student credit hours, 2005–2014, for ENST and ENGS students.
Internship Program

Our Internship Program is another HILE that we encourage through a simple application system. Students find an internship, identify a supervisor, and obtain a description of duties. The program director authorizes the internship for course credit. After the internship, the student provides a written report emphasizing daily duties, organizational aspect, and skills required and learned. Our students participate in paid and unpaid internships for variable credit. From Fall Semester 2009 to Spring Semester 2015, they have interned for firms specializing in environmental consulting, natural resources, and other environment-related services, such as local media outlets. They also have interned for local and state government, non-profit organizations, and educational groups. A general breakdown of the internships by category is displayed in Table 2-12 with a more comprehensive description of the different companies and internship positions is found in Appendix G. Since Summer 2009, 68 students (35 ENGS, 32 ENST) have received 230 GEOS hours of course credit.

Table 2-11. Competitive awards made to ENGS and ENST students, Fall 2009–Summer 2014.

<table>
<thead>
<tr>
<th>Term</th>
<th>Number of students</th>
<th>Funds, purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2009</td>
<td>2</td>
<td>$1,495 for conference travel</td>
</tr>
<tr>
<td>Spring 2010</td>
<td>1</td>
<td>$500 for study abroad</td>
</tr>
<tr>
<td>Summer 2010</td>
<td>5</td>
<td>$2,500 for study abroad</td>
</tr>
<tr>
<td>Summer 2011</td>
<td>7</td>
<td>$2,250 for study abroad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$250 for internship</td>
</tr>
<tr>
<td>Summer 2012</td>
<td>5</td>
<td>$2,000 for study abroad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$500 for internship</td>
</tr>
<tr>
<td>Summer 2013</td>
<td>8</td>
<td>$3,000 for study abroad</td>
</tr>
<tr>
<td>Spring 2014</td>
<td>1</td>
<td>$400 for conference travel</td>
</tr>
<tr>
<td>Summer 2014</td>
<td>7</td>
<td>$1,750 for study abroad</td>
</tr>
</tbody>
</table>

Capstone Course

Another program “enhancement” is the problem-based research students perform in GEOS 405, our capstone course. Syllabi for these courses are presented in Appendix B. Recent research topics have involved drilling cores obtained from the International Ocean Discovery Program, soil samples taken from conservation areas, and experiments relating to green roofs and wetlands. Normally, Environmental faculty evaluate the posters. In December 2014 and May 2015, we complemented faculty with former students with ENGS and ENST degrees whom we have invited to serve as career panelists. We rely partly on the collaborative posters to assess the degree programs. Poster titles and the rubric used for evaluating posters are presented in Appendix H.

Table 2-12. General breakdown of the cumulative number of student internships by category from Fall 2009 to Spring 2015.

<table>
<thead>
<tr>
<th>Category</th>
<th># Students (% total internships)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Consulting</td>
<td>7 (10%)</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>13 (19%)</td>
</tr>
<tr>
<td>Government</td>
<td>21 (30%)</td>
</tr>
<tr>
<td>Non-profit or Education</td>
<td>22 (32%)</td>
</tr>
<tr>
<td>Services, Information &amp; Media</td>
<td>6 (9%)</td>
</tr>
</tbody>
</table>
3+2 MOST
The College recently received approval for ENGS 3+2 with a non-thesis Master of Oceanography. This fast-track program offers motivated and exceptional students the opportunity to achieve aspirations in an efficient program at Texas A&M, completing the Bachelor of Science degree in the Environmental Geosciences program and the Oceanography non-thesis MS degree in five years. Only two courses will be used for dual credit in this program. The degree requires a total of 150 hours of coursework. The concurrent degree program will enable students to coordinate the required BS coursework for ENGS (114 undergraduate credit hours plus 6 dual credit graduate courses) and non-thesis MS coursework (36 credit hours including the six dual credit graduate courses) to complete the required credit hours for each degree without diminishing scope or quality of work and within five years.

We developed this program because of the growing need for trained ocean sciences and technology professionals, both in the public (integrated global ocean observing systems) and private sectors (energy and transportation industries). A series of trends are leading to an expansion of opportunities in this sector, including the exploration and exploitation of energy resources in deeper waters offshore (Gulf of Mexico), the continued growth of human populations along the coast, and growing efforts to predict and mitigate coastal hazards (hurricanes, tsunami, oil spills, and harmful algal blooms). Perhaps the greatest opportunity will come from the growth of ocean observing systems, integrated systems designed to collect, store and
deliver ocean data. The construction and maintenance of these systems will provide countless opportunities for professionals for decades to come. Texas is ranked third in numbers of jobs in the marine science and technology industry. However, the provision of education and training in ocean sciences and technology does not match other coastal states such as New Jersey and California. The development and growth of ocean observing has created the need for highly trained, non-thesis MS level scientists, a need that is currently overlooked by educational institutions in Texas.

Study Abroad Programs
Our College regularly offers faculty-led study abroad programs to ENGS and ENST students: to Brazil (2005, 2008, 2010 led by Brannstrom), to Belize (2012, co-led by Houser), to Costa Rica (2011, 2013, 2014, and 2015 co-led by Brannstrom, Houser, and Quiring). Normally, we teach six credit hours (GEOG 380; GEOG 450) on ENGS and ENST degree plans, which has encouraged strong demand for these overseas programs. Program brochures are provided in Appendix I.

Scholarships
Our program has modest resources in terms of scholarships. In 2013, we received the Chess Mizell Memorial Scholarship in honor of a student who passed away while enrolled in our program. In early 2015, we received the George J. Miller scholarship (endowed by our current Dean and her father). Both agreement forms are presented in Appendix J. Additionally, ENGS and ENST students, incoming and continuing, compete for $60K/yr in total scholarship funds awarded by our College’s Scholarship Committee. For incoming freshman, one scholarship was awarded to an ENGS student and one scholarship awarded to an ENST student out of a total of 17 scholarships awarded to incoming freshmen in the college. A total of 19 scholarships were awarded to continuing students in the college, of which seven were granted to ENGS
students and three to ENST students.

Social Events and Social Media
Social events aiming to build a sense of community are important aspects of our degree programs. In Spring 2015, we sponsored or co-sponsored three events focused on ENGS and ENST students: a climate change forum, which took place on Global Divestment Day (13 February) and featured several faculty speakers; a climate change policy forum, which featured faculty speakers and representatives of the Citizens’ Climate Lobby; and screening and panel discussion of “Chasing Ice,” for which we supported a campus-wide initiative.

The program coordinator, who meets with all incoming students at New Student Conferences and at Change of Major meetings, encourages students to participate in social media with ENVP. The ENVP student worker will also attempt to locate students once a semester and “friend” them. We have a strong Facebook presence, with 707 “friends.” Any current or former ENVP student can “friend” the profile for the program coordinator, Emily Dykes. We use this profile to send notifications and event invitations to students regarding upcoming events, deadlines, internships, job openings, study abroad opportunities, etc. The ENVP Facebook page, which has 425 “likes,” is primarily used for announcements for “Current ENVP students only,” which is the reason for fewer connections on this page. Former students and non-ENVP students will typically not “like” this page since the information does not pertain to them.

Our Twitter account is used to promote news items aiming to show ENGS and ENST students why their degree programs matter. Both Facebook and Twitter accounts help us promote attendance at social events such as environmental film screenings, the annual tailgate at a Texas A&M University home football game, and events relating to EPIC, the student organization.

We use our individual LinkedIn accounts to connect with current and former students. Our “group” includes students who have graduated with ENGS or ENST degrees. We have used these LinkedIn profiles to summarize the information about their careers (Table 4-11 and Appendix O). We also encourage all graduating seniors to develop LinkedIn profiles.

f. Assessment of Student Learning Outcomes

ENGS Outcomes and Objectives
1. Students will demonstrate depth of knowledge in the fundamental earth science-based environmental systems, the processes underpinning those systems, the links between them, and the main environmental outcomes.

2. Students will describe the
fundamental links between
environmental science and the public
policy arena.

3. Students will be able to collect,
analyze, and interpret data using
appropriate field, laboratory, and/or
computational techniques and will be
able to communicate their findings
and their relevance to environmental
issues in written and oral formats
to discipline-specific and general
audiences.

4. Students will recognize an ethical
dilemma in the environmental science-
policy domain and apply rational
decision-making in order to address it.

5. Students will work collaboratively
in teams toward a common goal
relating to environmental systems or
environmental science-policy linkages.

ENGS Measures and Findings
1. All final reports from the program
capstone course, GEOS 405, will be
scored using a rubric to evaluate the
extent to which the outcomes were
met. The reports are typically about
5,000 words and are expected to follow
the style of a journal manuscript.
The rubric is available through the
document repository.

Target: Class mean score of at
least 30 out of possible 40 on the
“content” category elements in the
adopted scoring rubric.

Findings, 2013–14: Target Partially
Met. Final reports from the Spring 2014 section of the Geosciences
capstone course were evaluated. Reports were received from a total
of eight ENGS majors. All were graded using the rubric that is
available through the document repository. The average score on
the subset of questions focused on report content was 34.8/40.0,
above the goal of 30.0/40.0.
However, we do not know which
specific areas of (a) environmental
systems and (b) environmental
policy scored relatively high or
relatively low; moreover, we used
the same rubric for ENGS and
ENST majors, even though the
majors have different requirements
for math, science, and social
science.

Final reports from the Spring 2013
and Summer II 2013 sections of
the Geosciences capstone course
were evaluated. Reports were
received from ten ENGS majors in
the spring and five in the summer.
All were graded using the rubric
that is available through the
document repository. The average
score on the subset of questions
focused on report content was
32.2/40.0, above the goal of
30.0/40.0.

2. Just prior to graduation, all students
are asked to complete a short exit
survey, which asks about their post-
graduation plans, perceived readiness
for work, and satisfaction with the
program, including the extent to
which they feel they have achieved the
student learning outcomes.

**Target:** At least 90% of students report feeling that they have achieved a depth of knowledge in environmental science.

**Findings, 2013–14:** Target Met. Exit surveys were obtained from December 2013 and May 2014 graduates for 29 valid surveys. In response to the statement “My education in the Environmental Programs at Texas A&M has provided me with a considerable depth of knowledge about environmental science,” 93.1% (n = 27) agreed. However, previously we did not report an item that bears directly on a Texas A&M University Undergraduate Learning Outcome regarding personal and social responsibility. In response to the statement “My education in the Environmental Programs at Texas A&M taught me to appreciate the ethical dimensions of environmental issues,” 79.3% (n = 23) agreed. Unfortunately, we lack an objective measure regarding student understanding of ethical dimensions of environmental issues, unlike the depth of knowledge criterion, which we assess in the capstone project in GEOS 405.

**Findings, 2012–13:** Target Met. Exit surveys from December 2012 and May 2013 graduates were analyzed. A total of 31 Environmental Geosciences graduates were surveyed and most responded to all questions. In response to the statement “My education in the Environmental Programs at Texas A&M has provided me with a considerable depth of knowledge about environmental science,” 94% (n = 29) agreed. Of those who agreed, 59% strongly agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree.

3. Just prior to graduation, all students will be asked to complete a short exit survey, which asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.

**Target:** At least 90% of students report feeling that they understand the links between environmental science and public policy.

**Findings, 2013–14:** Target Partially Met. Exit surveys were obtained from December 2013 and May 2014 graduates for 29 valid results. In response to the
statement “My education in the Environmental Programs at Texas A&M has provided me with an understanding of the links between environmental science and public policy,” 89.7% agreed (n = 26). This is a strong improvement from earlier findings. However, we lack an objective measure regarding student understanding of links between environmental science and policy. The full graduation survey and analysis of responses can be found in the document repository for this degree.

Findings, 2012–13: Target Not Met. Exit surveys from December 2012 and May 2013 graduates were analyzed. A total of 31 Environmental Geosciences graduates were surveyed and most responded to all questions. In response to the statement “My education in the Environmental Programs at Texas A&M has provided me with an understanding of the links between environmental science and public policy,” 74% (n = 23) agreed, with seven of the other eight choosing “neutral” as their response. Of those who agreed, 57% strongly agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree. This result may simply reflect the nature and courses of the Environmental Geosciences degree and it may be appropriate to adjust the target accordingly.

4. All final reports from the program capstone course, GEOS 405, will be scored using a rubric to evaluate the extent to which the outcomes were met. The reports are typically about 5,000 words and are expected to follow the style of a journal manuscript. The rubric is available through the document repository.
**Target:** Class mean score of at least 30 out of possible 40 on the “analysis” category elements in the adopted scoring rubric.

**Findings, 2013–14:** Target Met.
Final reports from the Spring 2014 section of the Geosciences capstone course were evaluated. Reports were received from a total of eight ENGS majors. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on data analysis was 33.8/40.0, above the goal of 30.0/40.0.

**Findings, 2012–13:** Target Met.
Final reports from the Spring 2013 and Summer II 2013 sections of the Geosciences capstone course were evaluated. Reports were received from a total of 10 ENGS majors in the spring and five in the summer. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on analysis was 31.6/40.0, above the target of 30.0/40.0.

5. All final reports from the program capstone course, GEOS 405, will be scored using a rubric to evaluate the extent to which the outcomes were met. The reports are typically about 5,000 words and are expected to follow the style of a journal manuscript. The rubric is available through the document repository.

**Target:** Class mean score of at least 30 out of possible 40 on the “writing” category elements in the adopted scoring rubric.

**Findings, 2013–14:** Target Met.
Final reports from the Spring 2014 section of the Geosciences capstone course were evaluated. Reports were received from a total of eight ENGS majors. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on report writing was 37.1/40.0, above the goal of 30.0/40.0, and represents a strong improvement from previous findings, likely the result of improved efforts to encourage students to visit the writing center and provide more writing guidance.

**Findings, 2012–13:** Target Met.
Final reports from the Spring 2013 and summer II 2013 sections of the Geosciences capstone course were evaluated. Reports were received from a total of 10 ENGS majors in the spring and five in the summer. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on writing was 30.3/40.0, marginally above the goal of 30.0/40.0.

6. At the end of the GEOS 405 capstone course, students create and present research posters describing their projects and findings. These posters are viewed by other students and by College faculty. Selected faculty
judge the posters using the rubric that is saved in the document repository.  
*Target:* Class mean of at least 16 out of possible 20 from average score of selected faculty judges.  
*Findings, 2013–14:* Target Met. Posters from the two spring 2014 sections of the Geosciences capstone course were graded by three faculty members from the College who were not instructors of the sections. The scoring rubric they used is available through the document repository. There were a total of seven posters presented by teams made up of between three and five Environmental Geosciences and/or Environmental Studies students. Each poster was scored and all students in that team received the same grade. Thus, it is not possible to differentiate the performance of the Environmental Studies and Environmental Geosciences majors. The average score given by the judges was 16.8/20.0.

7. Just prior to graduation, all students were asked to complete a short exit survey, which asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.  
*Target:* At least 90% of students will report feeling satisfied overall with the degree program.  
*Findings, 2013–14:* Target Met. Exit surveys from December 2013 and May 2014 graduates were analyzed. A total of 29 valid surveys were obtained. In response to the statement “My education in the Environmental Programs at Texas A&M was overall a positive experience,” 100% (n = 29) agreed, with 79.3% indicating “strongly agree” to this statement. The full graduation survey and analysis of responses can be found in the document repository for this degree.  
*Findings, 2012–13:* Target Met. Exit surveys from December 2012 and May 2013 graduates
were analyzed. A total of 31 Environmental Geosciences graduates were surveyed and most responded to all questions. In response to the statement “My education in the Environmental Programs at Texas A&M was overall a positive experience,” 97% (n = 30) agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree.

8. Just prior to graduation, all students will be asked to complete a short exit survey, which asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.

Target: At least 90% of students will report feeling satisfied with the advising they received. (We will delete this item because it relates to advising, not learning; hence, we do not report findings here)

9. Just prior to graduation, all students will be asked to complete a short exit survey, which asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.

Target: At least 80% of students
will respond yes to the question “I would choose this major if I were to start my undergraduate career over again.”

Findings, 2013–14: Target Met. Exit surveys from December 2013 and May 2014 graduates were analyzed. A total of 29 valid surveys were obtained. In response to the statement “I would choose this major if I were to start my undergraduate career over again,” 82.7% (n = 24) agreed. This is a slight decline for our previous finding. The full graduation survey and analysis of responses can be found in the document repository for this degree.

Findings, 2012–13: Target Met. Exit surveys from December 2012 and May 2013 graduates were surveyed and most responded to all questions. In response to the statement “I would choose this major if I were to start my undergraduate career over again,” 86% (n = 25 of 29 responses to this question) agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree.

10. Each year at the end of the spring semester, students in GEOS 405 (the capstone course for BS Environmental Geosciences and BS Environmental Studies) work together to write a Consensus Report, which documents their collective opinion on the strengths and weaknesses of the environmental degree programs. Students typically provide feedback on a range of issues including advising, course requirements, research opportunities, internships, career fairs, etc. This information is used by the program director to make program improvements.

Target: The general tenor of the consensus report will be positive regarding both the program overall and student advising. (We will delete this item because previous findings indicate that this report does not generate information useful to curricular reforms or programmatic changes.)
ENST Outcomes and Objectives

1. Students will describe the fundamental earth science-based environmental systems and the main environmental outcomes.

2. Students will describe the fundamental links between environmental science and the public policy arena, competing interests and ideas, and the processes that link public policies and environmental science.

3. Students will be able to collect, analyze, and interpret data using appropriate field, laboratory, and/or computational techniques and will be able to communicate their findings and their relevance to environmental issues in written and oral formats to discipline-specific and general audiences.

4. Students will recognize an ethical dilemma in the environmental science-policy domain and apply rational decision-making in order to address it.

5. Students will work collaboratively in teams toward a common goal relating to environmental systems or environmental science-policy linkages.

ENST Measures and Findings

1. All final reports from the program capstone course, GEOS 405, will be scored using a rubric to evaluate the extent to which the outcomes were met. The reports are typically about 5,000 words and are expected to follow the style of a journal manuscript.

The rubric is available through the document repository.

Target: Class mean score of at least 30 out of possible 40 on the “content” category elements in the adopted scoring rubric.

Findings, 2013–14: Target Met. Final reports from the Spring 2014 section of the Geosciences capstone course were evaluated. Reports were received from a total of 10 ENST majors. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on report content was 30.9/40.0, (barely) above the goal of 30.0/40.0. The difference between average ENST and ENGS scores was greater than last year and shows cause for concern. Unfortunately, we do not know which specific areas of (a) environmental systems and (b) environmental policy were responsible for the relatively low score of ENST majors because we used the same rubric for ENGS and ENST majors, even though the majors have different requirements for math, science, and social science.

Findings, 2012–13: Target Not Met. Final reports from the Spring 2013 and Summer II 2013 sections of the Geosciences capstone course were evaluated. Reports were received from a total of two ENST majors in the spring and nine in the summer. All were graded
using the rubric that is available through the document repository. The average score on the subset of questions focused on report content was 28.9/40.0, below the target of 30.0/40.0. It should be noted that this average largely reflects the scores of the summer section and that the five week course length in that section made writing and revision of the papers especially rushed.

2. Just prior to graduation, all students will be asked to complete a short exit survey, which asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.

**Target:** At least 90% of students report feeling that they have achieved a depth of knowledge in environmental science.

**Findings, 2013–14:** Target Met. Exit surveys were obtained from December 2013 and May 2014 ENST graduates for 26 valid surveys. In response to the statement “My education in the Environmental Programs at Texas A&M has provided me with a considerable depth of knowledge about environmental science,” 100% (n = 26) agreed. Previously we did not report an item that bears directly on a Texas A&M University Undergraduate Learning Outcome regarding personal and social responsibility. In response to the statement “My education in the Environmental Programs at Texas A&M taught me to appreciate the ethical dimensions of environmental issues,” 92.3% (n = 24) agreed. However, we lack an objective measure regarding student understanding of ethical dimensions of environmental issues, unlike the depth of knowledge criterion, which we assess in the capstone project in GEOS 405.

**Findings, 2012–13:** Target Met. Exit surveys from December 2012 and May 2013 graduates were analyzed. A total of 20 Environmental Studies graduates were surveyed and most responded to all questions. In response to the statement “My education in the Environmental Programs at Texas A&M has provided me with a
considerable depth of knowledge about environmental science,” 90% (n = 18) agreed. Of those who agreed, 72% strongly agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree.

3. Just prior to graduation, all students will be asked to complete a short exit survey, which asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.

Target: At least 90% of students report feeling that they understand the links between environmental science and public policy.

Exit surveys were obtained from December 2013 and May 2014 graduates for 26 valid results. In response to the statement “My education in the Environmental Programs at Texas A&M has provided me with an understanding of the links between environmental science and public policy,” 100% (n = 20) agreed. Of those who agreed, 60% strongly agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree.

Exit surveys from December 2012 and May 2013 graduates were analyzed. A total of 20 Environmental Studies graduates were surveyed and most responded to all questions. In response to the statement “My education in the Environmental Programs at Texas A&M has provided me with an understanding of the links between environmental science and public policy,” 100% (n = 20) agreed. Of those who agreed, 60% strongly agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree.

4. All final reports from the program capstone course, GEOS 405, will be scored using a rubric to evaluate the extent to which the outcomes were met. The reports are typically about 5,000 words and are expected to follow the style of a journal manuscript. The rubric is available through the document repository.

Target: Class mean score of at least 30 out of possible 40 on the “analysis” category elements in the adopted scoring rubric.

Final reports from the Spring 2014 section of the Geosciences capstone course were evaluated. Reports were received from a total of 10 ENST majors. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on data analysis and
was 30.1/40.0, (barely) above the goal of 30.0/40.0. The difference between average ENST and ENGS scores was greater than last year and may be worth monitoring in the future. However, we used the same rubric for ENGS and ENST majors, even though the majors have different requirements for math, science, and social science, so that it is possible that we are using an inappropriate approach to assess learning in the capstone course, in which most project stress environmental science rather than science-policy linkages.

Findings, 2012–13: Target Met. Final reports from the Spring 2013 and Summer II 2013 sections of the Geosciences capstone course were evaluated. Reports were received from a total of two ENST majors in the spring and nine in the summer. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on analysis was 31.1/40.0, above the target of 30.0/40.0.

5. All final reports from the program capstone course, GEOS 405, will be scored using a rubric to evaluate the extent to which the outcomes were met. The reports are typically about 5,000 words and are expected to follow the style of a journal manuscript. The rubric is available through the document repository.

Target: Class mean score of at least 30 out of possible 40 on the “writing” category elements in the adopted scoring rubric.

Findings, 2013–14: Target Met. Final reports from the Spring 2014 section of the Geosciences capstone course were evaluated. Reports were received from a total of 10 ENST majors. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on report writing was 34.2/40.0, above the goal of 30.0/40.0 but below the average score for ENGS students. This score is likely the result of improved efforts to encourage students to visit the Writing Center and provide more writing guidance, especially with regard to references and citations.

Findings, 2012–13: Target Not Met. Final reports from the Spring 2013 and Summer II 2013 sections of the Geosciences capstone course were evaluated. Reports were received from a total of two ENST majors in the spring and nine in the summer. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on analysis was 31.1/40.0, above the target of 30.0/40.0.

5. All final reports from the program capstone course, GEOS 405, will be scored using a rubric to evaluate the extent to which the outcomes were met. The reports are typically about 5,000 words and are expected to follow the style of a journal manuscript. The rubric is available through the document repository.

Target: Class mean score of at least 30 out of possible 40 on the “writing” category elements in the adopted scoring rubric.

Findings, 2013–14: Target Met. Final reports from the Spring 2014 section of the Geosciences capstone course were evaluated. Reports were received from a total of 10 ENST majors. All were graded using the rubric that is available through the document repository. The average score on the subset of questions focused on report writing was 34.2/40.0, above the goal of 30.0/40.0 but below the average score for ENGS students. This score is likely the result of improved efforts to encourage students to visit the Writing Center and provide more writing guidance, especially with regard to references and citations.
revision of the papers especially rushed.

6. At the end of the GEOS 405 capstone course, students create and present research posters describing their projects and findings. These posters are viewed by other students and by College faculty. Selected faculty members judge the posters using the rubric that is saved in the document repository.

*Target:* Class mean of at least 16 out of possible 20 from average score of selected faculty judges.

*Findings, 2013–14:* Target Met. Posters from the two Spring 2014 sections of the Geosciences capstone course were graded by three faculty members from the College who were not instructors of the sections. The scoring rubric they used is available through the document repository. There were a total of seven posters presented by teams made up of between three and five Environmental Geosciences and/or Environmental Studies students. Each poster was scored and all students in that team received the same grade. Thus, it is not possible to differentiate the performance of the Environmental Studies and Environmental Geosciences majors. The average score given by the judges was 16.8/20.0.

*Findings, 2012–13:* Target Met. Posters from the two Spring 2013 sections of the Geosciences capstone course were graded by three faculty members from the College who were not instructors of the sections. The scoring rubric they used is available through the document repository. Eleven posters were presented by teams of between two to five Environmental Geosciences and/or Environmental Studies students. Each poster was scored and all students in that team received the same grade. Thus, it is not possible to differentiate the performance of the Environmental Studies and Environmental Geosciences majors. The average score given by the judges was 17.1/20.0.

7. Just prior to graduation, all students will be asked to complete a short exit survey that asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.
Target: At least 90% of students will report feeling satisfied overall with the degree program.

Findings, 2013–14: Target Met. Exit surveys from December 2013 and May 2014 graduates were analyzed. A total of 26 valid surveys were obtained. In response to the statement “My education in the Environmental Programs at Texas A&M was overall a positive experience,” 100% (n = 26) agreed, with 61.5% indicating “strongly agree” to this statement. The full graduation survey and analysis of responses can be found in the document repository for this degree.

Findings, 2012–13: Target Met. Exit surveys from December 2012 and May 2013 graduates were analyzed. A total of 20 Environmental Studies graduates were surveyed and most responded to all questions. In response to the statement “My education in the Environmental Programs at Texas A&M was overall a positive experience,” 95% (n = 19) agreed. Of those who agreed, 79% strongly agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree.

8. Just prior to graduation, all students will be asked to complete a short exit survey, which asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.

Target: At least 90% of students will report feeling satisfied with the advising they received. [this will be deleted for 2015 assessment]

9. Just prior to graduation, all students will be asked to complete a short exit survey, which asks about their post-graduation plans, perceived readiness for work, and satisfaction with the program, including the extent to which they feel they have achieved the student learning outcomes.

Target: At least 80% of students will respond yes to the question “I would choose this major if I were to start my undergraduate career over again.”

Findings, 2013–14: Target Not Met. Exit surveys from December 2013 and May 2014 graduates were analyzed. A total of 26 valid surveys were obtained. In response to the statement “I would choose this major if I were to start my undergraduate career over again,” 69.2% (n = 18) agreed, similar to previous results for ENST, but a substantial difference for the 81.5% rate reported for ENGS. Nonetheless, 38.5% strongly agreed with this statement, indicating a skewed distribution (10/26 strong agreed, 8/26 agreed, six were neutral, and two disagreed). The previous Action Plan created for the previous similar finding is thought to be an unlikely means to understand and
address this finding, so we have created a new Action Plan. 
Findings, 2012–13: Target Not Met. Exit surveys from December 2012 and May 2013 graduates were analyzed. A total of 20 Environmental Studies graduates were surveyed and most responded to all questions. In response to the statement “I would choose this major if I were to start my undergraduate career over again,” 68% (n = 13 of the 19 responses to this question) agreed. Of those who agreed, 54% strongly agreed. The full graduation survey and analysis of responses can be found in the document repository for this degree.

10. Each year at the end of the spring semester, students in GEOS 405 (the capstone course for BS Environmental Geosciences and BS Environmental Studies) work together to write a Consensus Report, which documents their collective opinion on the strengths and weaknesses of the environmental degree programs.
Students typically provide feedback on a range of issues including advising, course requirements, research opportunities, internships, career fairs, etc. This information is used by the program director to make program improvements.

Target: The general tenor of the consensus report will be positive regarding both the program overall and student advising. (This will be deleted for 2015 assessment.)
Chapter 3. Faculty Profile

Environmental faculty profiles are summarized in Table 3-1 below, while their short CVs are compiled in Appendix K.

Table 3-1. Summary of environmental faculty.

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Rank (title), Department</th>
<th>Contribution to Environmental Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brannstrom, Christian</td>
<td>Professor (Geography) and Director</td>
<td>Director GEOG 309 (Energy) GEOS 410 (Global Change)</td>
</tr>
<tr>
<td>Grossman, Ethan</td>
<td>Professor and Michel T. Halbouty Chair in Geology (Geology and Geophysics)</td>
<td>EPAC member GEOS 405; GEOL 311 (Principles)</td>
</tr>
<tr>
<td>Nielson-Gammon, John</td>
<td>Regents Professor and Texas State Climatologist (Atmospheric Sciences)</td>
<td>EPAC member GEOS 210; ATMO 324 (Physical and Regional Climatology)</td>
</tr>
<tr>
<td>Roark, Brendan</td>
<td>Associate Professor (Geography) and Director, Stable Isotope Geosciences Facility (SIGF)</td>
<td>EPAC member GEOS 405; GEOG 203; GEOG 442 (Past Climates)</td>
</tr>
<tr>
<td>Yvon-Lewis, Shari</td>
<td>Professor (Oceanography)</td>
<td>EPAC member GEOS 105; OCNG 440 (Chemical Oceanography); OCNG 350 (Marine Pollution); OCNG 491 (Research)</td>
</tr>
<tr>
<td>Bednarz, Robert</td>
<td>Professor (Geography)</td>
<td>GEOG 304 (Economic Geography); GEOG 306 (Urban Geography)</td>
</tr>
<tr>
<td>Bednarz, Sarah</td>
<td>Professor (Geography)</td>
<td>GEOS 484 (Internship); GEOS 308 (Study Abroad)</td>
</tr>
<tr>
<td>Bishop, Michael</td>
<td>Professor and Haynes Chair in Geosciences (Geography)</td>
<td>GEOG 390 (GIS); GEOG 361 (Remote Sensing)</td>
</tr>
<tr>
<td>Brooks, Sarah</td>
<td>Associate Professor (Atmospheric Sciences)</td>
<td>GEOS 105; ATMO 463 (Air Pollution Meteorology); use of lab space for GEOS 405 projects</td>
</tr>
<tr>
<td>Brooks, David</td>
<td>Professor (Oceanography)</td>
<td>OCNG 251; GEOS 101; GEOS 405</td>
</tr>
<tr>
<td>Cairns, David</td>
<td>Professor and Head (Geography)</td>
<td>GEOG 203; GEOG 335 (Biogeography)</td>
</tr>
<tr>
<td>Campbell, Lisa</td>
<td>Professor (Oceanography)</td>
<td>OCNG 251; OCNG 420 (Biological Oceanography); OCNG 491 (Research)</td>
</tr>
<tr>
<td>Chapman, Piers</td>
<td>Professor (Oceanography)</td>
<td>OCNG 251; GEOS 101</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Department</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Collins, Don</td>
<td>Professor (Atmospheric Sciences)</td>
<td>Former ENVP Director</td>
</tr>
<tr>
<td>Dessler, Andrew</td>
<td>Professor (Atmospheric Sciences)</td>
<td>GEOS 210; GEOS 444 (Science and Politics of Climate Change)</td>
</tr>
<tr>
<td>DiMarco, Steven</td>
<td>Professor (Oceanography)</td>
<td>GEOS 470 (Data Methods in Geosciences); OCNG 491 (Research)</td>
</tr>
<tr>
<td>Filippi, Anthony</td>
<td>Associate Professor (Geography)</td>
<td>GEOG 475 (Advanced GIS); GEOG 361 (Remote Sensing)</td>
</tr>
<tr>
<td>Frauenfeld, Oliver</td>
<td>Assistant Professor (Geography)</td>
<td>GEOG 203; GEOG 324 (Global Climate Region)</td>
</tr>
<tr>
<td>Giardino, John Richard</td>
<td>Professor (Geology and Geophysics)</td>
<td>GEOS 101; GEOL 420 (Environmental Geology)</td>
</tr>
<tr>
<td>Goldberg, Daniel</td>
<td>Assistant Professor (Geography)</td>
<td>GEOG 390 (GIS); GEOG 392 (GIS Programming)</td>
</tr>
<tr>
<td>Güneralp, Inci</td>
<td>Associate Professor (Geography)</td>
<td>GEOG 203; GEOG 360 (Natural Hazards); GEOG 467 (Dynamic Modeling)</td>
</tr>
<tr>
<td>Herbert, Bruce</td>
<td>Professor and Enron Oil and Gas Teaching Professorship in Geosciences (Geology and Geophysics)</td>
<td>GEOL 420 (Environmental Geology)</td>
</tr>
<tr>
<td>Houser, Chris</td>
<td>Associate Professor (Geography) and Associate Dean for Undergraduate and Faculty Affairs</td>
<td>GEOG 203; GEOG 205; GEOG 380 (Environmental Workshop); GEOG 331 (Geomorphology); GEOG 370 (Coastal Processes)</td>
</tr>
<tr>
<td>Jepson, Wendy</td>
<td>Associate Professor (Geography)</td>
<td>GEOG 201; GEOG 430 (Environmental Justice); GEOG 330 (Resources and Environment)</td>
</tr>
<tr>
<td>Klein, Andrew</td>
<td>Professor (Geography)</td>
<td>GEOG 390 (GIS); GEOS 405; GEOG 332 (Cartography)</td>
</tr>
<tr>
<td>Knap, Anthony</td>
<td>Professor (Oceanography), Director (Geochemical and Environmental Research Group) and James Whatley Endowed Chair in Geosciences</td>
<td>Facilitate student use of GERG for GEOS 405 projects</td>
</tr>
<tr>
<td>Lafon, Charles</td>
<td>Professor (Geography)</td>
<td>GEOG 203; GEOG 450 (Field Geography); GEOG 435 (Plant Geography)</td>
</tr>
<tr>
<td>O'Reilly, Kathleen</td>
<td>Associate Professor (Geography)</td>
<td>GEOG 330 (Environment and Resources); GEOG 401 (Political Geography)</td>
</tr>
<tr>
<td>Plotkin, Pamela</td>
<td>Associate Research Professor (Oceanography) and Director (Texas Sea Grant College Program)</td>
<td>OCNG 491 (Research) Facilitate outreach and student research and internships</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Courses</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Quiring, Steven</td>
<td>Associate Professor (Geography)</td>
<td>GEOS 101; GEOG 203; GEOG 380 (Environmental Workshop); GEOG 434 (Hydrology and Environment)</td>
</tr>
<tr>
<td>Richardson, Mary Jo</td>
<td>Regents Professor (Oceanography; Geology and Geophysics)</td>
<td>Led process to create ENVP as Associate Dean GEOS 251; GEOS 481 (Seminar)</td>
</tr>
<tr>
<td>Riggs, Eric M.</td>
<td>Assistant Dean and Research Associate Professor (Geology and Geophysics)</td>
<td>Research in geoscience education</td>
</tr>
<tr>
<td>Saravanan, Ramalingam</td>
<td>Professor (Atmospheric Sciences)</td>
<td>ATMO 201; ATMO 321 (Computational Applications Atmo Sci)</td>
</tr>
<tr>
<td>Schade, Gunnar</td>
<td>Associate Professor (Atmospheric Sciences)</td>
<td>ATMO 201; ATMO 363 (Atmospheric Chemistry and Air Pollution)</td>
</tr>
<tr>
<td>Schamberger, Kathryn</td>
<td>Assistant Professor (Oceanography)</td>
<td>OCNG 251; OCNG 491 (Research)</td>
</tr>
<tr>
<td>Stössel, Achim</td>
<td>Associate Professor (Oceanography)</td>
<td>OCNG 251; OCNG 410 (Physical Oceanography); OCNG 491 (Research)</td>
</tr>
<tr>
<td>Tchakerian, Vatche</td>
<td>Professor (Geography; Geology and Geophysics)</td>
<td>Co-taught first GEOS 105 GEOS 101; GEOS 105; GEOG 400 (Arid Lands)</td>
</tr>
<tr>
<td>Thomas, Deborah</td>
<td>Professor and Head (Oceanography)</td>
<td>ONCG 251; OCNG 430 (Geological Oceanography); OCNG 491 (Research)</td>
</tr>
<tr>
<td>Thornton, Daniel</td>
<td>Associate Professor (Oceanography)</td>
<td>OCNG 251; GEOS 105; OCNG 420 (Biological Oceanography)</td>
</tr>
<tr>
<td>Wade, Terry</td>
<td>Deputy Director and Research Professor, Geochemical and Environmental Research Group (GERG)</td>
<td>Facilitate use of GERG for GEOS 405 projects</td>
</tr>
<tr>
<td>Zhan, Hongbin</td>
<td>Endowed Ray C. Fish Professor in Geology (Geology and Geophysics)</td>
<td>GEOL 410 (Hydrogeology)</td>
</tr>
</tbody>
</table>
Chapter Four. Student Profile

We present our student profile as of late March 2015 for students in each degree program and aggregated for both programs. Appendix L presents historical and current data on select metrics.

a. Demographics and Diversity

Our most recent demographic and diversity data, from Spring 2015, indicate that we will soon diverge from our historical degree data in terms of women and non-white students (Table 4-1). In summary, our programs are becoming more inclusive. For example, women comprise 52.6% of ENGS and 63.2% of ENST, while in 2009, men accounted for 59.7% and 56.9% of ENGS and ENST, respectively. The enrollment of self-identified Hispanic students has increased from 15% overall in 2009 to nearly 25% in 2015.

Data provided by the Scholarships and Financial Office indicate that mean debt per student upon graduation is $20,322 for ENST graduates and $22,857 for ENGS graduates. Spring 2015 students on PELL grants amount to 21.7% of ENST students and 21.5% of ENGS students, nearly identical to the Geosciences rate (Table 4-2).

<table>
<thead>
<tr>
<th></th>
<th>ENGS</th>
<th>ENST</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Female</strong></td>
<td>71</td>
<td>84</td>
<td>155</td>
</tr>
<tr>
<td></td>
<td>54.6%</td>
<td>63.6%</td>
<td>59.2%</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>59</td>
<td>48</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>45.4%</td>
<td>36.4%</td>
<td>40.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>130</td>
<td>132</td>
<td>262</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ENGS</th>
<th>ENST</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>White</strong></td>
<td>80</td>
<td>87</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>61.5%</td>
<td>65.9%</td>
<td>63.7%</td>
</tr>
<tr>
<td><strong>Hispanic</strong></td>
<td>33</td>
<td>33</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>25.4%</td>
<td>25.0%</td>
<td>25.2%</td>
</tr>
<tr>
<td><strong>Black</strong></td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>3.8%</td>
<td>3.8%</td>
<td>3.8%</td>
</tr>
<tr>
<td><strong>Other/Non reporting</strong></td>
<td>12</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>9.2%</td>
<td>5.3%</td>
<td>7.3%</td>
</tr>
<tr>
<td><strong>First generation in college</strong></td>
<td>30</td>
<td>36</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>23.1%</td>
<td>27.3%</td>
<td>25.2%</td>
</tr>
</tbody>
</table>
b. Cohorts

The inclusive nature of our programs is also evidenced by the strong increase in number of students in cohorts (Table 4-3). For example, our first-year students (U1) account for less than 10% of our total student enrollment. But by the U3 cohort, enrollment triples, then quadruples at the U4 cohort (Table 4-3). We attribute this increase to our ability to work with transfer students and change-of-major students who seek our degree. This increase in enrollment by cohort means that we must project forward our U2 and U3 enrollments to recruit instructors for GEOS 405, which students normally take while they are in U4 status. But, GEOS 405 is a writing-intensive class, which requires team-based projects and therefore cannot be taught to more than ~20 students per instructor. When our enrollments were modest, in the early 2000s, we could offer one section of GEOS 405 per semester, but now we need to offer two or three sections per semester to accommodate student demand. This has made it imperative to recruit more GEOS 405 instructors.

The number of students in individual cohorts, which are defined by accumulated hours, may be misleading. Many freshmen come to campus with a high number of credits from dual- credit program and AP exam scores, so they are U2 even though they are first-year students. Similarly, the number of U4 students is likely an over-estimate because of transfer hours and high school programs such as the Early College Program, dual credit, or credit by examination. For example, a first-time-in-college freshman may have enough hours to be classified as a U2 (sophomore) or U3 (junior). Moreover, transfer or change of major students will typically come in as at least U2 classifications, but sometimes as high as a U4 (senior). This does not mean that they will graduate at the same time as other students of the same classification if their hours do not count towards the degree. Consequently, we will have students who are in the U4 classification for more than one year.

Table 4-3. Cohorts of ENGS and ENST students, Spring 2015.

<table>
<thead>
<tr>
<th></th>
<th>ENGS</th>
<th>ENST</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1</td>
<td>12</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>U2</td>
<td>29</td>
<td>37</td>
<td>66</td>
</tr>
<tr>
<td>U3</td>
<td>36</td>
<td>35</td>
<td>71</td>
</tr>
<tr>
<td>U4</td>
<td>53</td>
<td>49</td>
<td>102</td>
</tr>
</tbody>
</table>

Table 4-2. College of Geosciences and Texas A&M University undergraduate demographic and ethnicity data, Spring 2015.

<table>
<thead>
<tr>
<th>Geosciences Undergraduates</th>
<th>TAMU Undergraduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female 383 (38.90%)</td>
<td>20,472 (48.80%)</td>
</tr>
<tr>
<td>Male 602 (61.10%)</td>
<td>21,479 (51.20%)</td>
</tr>
<tr>
<td>Total 985</td>
<td>41,951</td>
</tr>
</tbody>
</table>

| White 664 (67.40%)        | 27,470 (65.50%)     |
| Hispanic 199 (20.20%)     | 8,756 (20.90%)      |
| Black 34 (3.50%)          | 1,417 (3.40%)       |
| First generation in college 262 (26.60%) | 10,698 (25.50%)   |
admitted and eventually enrolled. The
gender difference among applicants
and enrolled appears around 2010,
with nearly double the number of
women applying in 2014 as men. We
enroll a low percentage of our admitted
students for unknown reasons. Possibly,
financial need is a major concern; also,
students admitted to our programs
may have better financial offers at
other programs. We contact by mail
and email all students admitted to our
programs, encouraging them to ask us
questions or visit us.

To show these processes in more detail,
we identified the origins of our more
recent graduates. Students graduating
in May 2015 with degrees in ENGS
(n=16) originated primarily as changes
of major from outside our College
(44%) and as transfer students (19%)
(Figure 4-1). Only 25% started the
program as freshmen admits. Table
4-5 shows the origin of the change-of-
major students over time; primarily,
ENGS students arrive at our program
from the general studies program and
various other majors.

Students graduating in May 2015 with
degrees in ENST (n=20) originated
primarily as changes of major from
outside our College (45%) and as transfer students (19%) (Figure 4-2).
Only 25% started the program as freshmen admits. Table 4-5 shows the
origin of the change-of-major students over time; primarily, ENGS students
arrive at our program from the general studies program and varied other
majors. The origin of ENST student

Table 4-4. Students applied, admitted, and enrolled in ENGS and ENST programs.

<table>
<thead>
<tr>
<th>Major</th>
<th>Term</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>All</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Applied</td>
<td>Admitted</td>
<td>Enrolled</td>
<td>Applied</td>
<td>Admitted</td>
<td>Enrolled</td>
</tr>
<tr>
<td>ENGS</td>
<td>2007</td>
<td>9</td>
<td>8</td>
<td>3</td>
<td>8</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>16</td>
<td>11</td>
<td>6</td>
<td>12</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>23</td>
<td>14</td>
<td>9</td>
<td>21</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>23</td>
<td>15</td>
<td>5</td>
<td>26</td>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>22</td>
<td>17</td>
<td>8</td>
<td>45</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>38</td>
<td>29</td>
<td>17</td>
<td>36</td>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>33</td>
<td>24</td>
<td>18</td>
<td>21</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>32</td>
<td>23</td>
<td>11</td>
<td>15</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>ENST</td>
<td>2007</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>11</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>15</td>
<td>9</td>
<td>3</td>
<td>11</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>24</td>
<td>15</td>
<td>4</td>
<td>11</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>26</td>
<td>17</td>
<td>7</td>
<td>26</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>34</td>
<td>16</td>
<td>7</td>
<td>25</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>45</td>
<td>25</td>
<td>14</td>
<td>22</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>41</td>
<td>31</td>
<td>12</td>
<td>21</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>33</td>
<td>22</td>
<td>8</td>
<td>16</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>
differs somewhat from ENGS, in that students leave ENGS for ENST. We suspect that the different math and science requirements play a role in the decision to move from ENGS to ENST, but many students making this switch have a genuine passion for policy-related issues and seek more social science coursework.

Related to program origins of our most graduates are data on the number of students who left our program as changes of major and who arrived in our program. The GEST program is General Studies, which captures
students who leave a major before they transfer to a different major.

To view this phenomenon of changing majors, transfer students, and eventual graduation, we also analyzed the “outcome” of the Fall 2010 cohort of ENGS and ENST students. Viewing the program from this perspective, however, omits the many students who arrive at our major from other programs. Figure 4-3 presents cohort outcomes for ENGS students. In Fall 2010, this cohort comprised 19 freshman and six transfer students. By Spring 2015, six of 19 freshmen and one of six transfers graduated with the ENGS degree by Spring 2015. Out of the initial cohort of 25 ENGS students, 14 changed major, of which half stayed in Geosciences majors (four of out of 25 changed major to ENST). However, from the initial cohort, one was dismissed because of GPA less than 2.0 and three students stopped before graduating. Among the 14 students who changed majors, two were eventually dismissed and five graduated from programs outside our College. Overall, six of the 25 initial cohort were dismissed or stopped their degrees.

**Table 4-5.** Change of majors into and out of ENGS and ENST, 2012–14.

<table>
<thead>
<tr>
<th>Previous major</th>
<th># students</th>
<th>Change of Major into ENST</th>
<th>Previous major</th>
<th># students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>37</td>
<td>ENST 11</td>
<td>GEST 30</td>
<td></td>
</tr>
<tr>
<td>GEST</td>
<td>20</td>
<td>ENST 9</td>
<td>ENST 11</td>
<td></td>
</tr>
<tr>
<td>ENST</td>
<td>9</td>
<td>GEOL 6</td>
<td>GEOL 7</td>
<td></td>
</tr>
<tr>
<td>GEOL</td>
<td>6</td>
<td>BIOL 5</td>
<td>METL 2</td>
<td></td>
</tr>
<tr>
<td>BIOL</td>
<td>5</td>
<td>METL 2</td>
<td>GEOP 3</td>
<td></td>
</tr>
<tr>
<td>METL</td>
<td>5</td>
<td>Other 37</td>
<td>Other 85</td>
<td></td>
</tr>
<tr>
<td>GEOP</td>
<td>3</td>
<td>GEST 30</td>
<td>ENST 11</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>37</td>
<td>ENST 11</td>
<td>ENST 11</td>
<td></td>
</tr>
<tr>
<td>GEST</td>
<td>20</td>
<td>Other 37</td>
<td>ENST 11</td>
<td></td>
</tr>
<tr>
<td>ENST</td>
<td>9</td>
<td>GEOL 6</td>
<td>GEOL 7</td>
<td></td>
</tr>
<tr>
<td>GEOL</td>
<td>6</td>
<td>BIOL 5</td>
<td>METL 2</td>
<td></td>
</tr>
<tr>
<td>BIOL</td>
<td>5</td>
<td>METL 2</td>
<td>GEOP 3</td>
<td></td>
</tr>
<tr>
<td>METL</td>
<td>5</td>
<td>Other 37</td>
<td>Other 85</td>
<td></td>
</tr>
<tr>
<td>GEOP</td>
<td>3</td>
<td>GEST 30</td>
<td>ENST 11</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 4-2.** Program origins of Spring 2015 ENST Graduates
Figure 4-4 presents cohort outcomes for ENST students. In Fall 2010, this cohort comprised 12 freshman and six transfer students. By Spring 2015, six of 12 freshman and four of six transfers graduated with the ENST degree by Spring 2015; one student had been dismissed for poor grades. Out of the initial cohort of 18 ENST students, seven changed major, three to programs within Geosciences and three outside our College, while one student who changed majors was eventually dismissed. Overall, two of the initial cohort of 18 were dismissed.

c. Grade Point Average

However, little difference between ENGS and ENST appears when considering grade point average at Texas A&M University. ENGS students have a mean of 2.76 while ENST students have 2.84, possibly because ENGS requires more math and science, but we have no objective data supporting this possible explanation (Table 4-6).

But possibly a stronger explanation is that women in our programs have a higher grade point average than men. Figure 4-5 shows the distribution of male and female GPRs, indicating a
clear break at about GPR = 3.5. Many more women than men are represented above GPR = 3.0.

Portrayed as a fraction exceeding GPR, Figure 4-6 shows this gap emerge between about GPR = 3.5 and GPR = 2.3. The gap appears greatest at GPR = 3.2. Fewer than 20% of men have GPRs higher than 3.2, but nearly 40% of women have GPRs higher than 3.2. We do not have compelling reasons to explain this difference in GPR between men and women.

d. High School Ranking and Standardized Test Scores

Comparing ENGS and ENST students in terms of high school and standardized test credentials reveals that ENGS students are higher ranked in their high schools (84th percentile compared to 80th percentile), and perform better on SAT verbal (565.7 compared to 556.9) and math (599.9 compared to 557.7). This difference persists when we analyzed data from 2009, 2011, and 2013 (Table 4-7).

We separated the ENGS and ENST student data according to high school percentiles and SAT scores, and also

| Table 4-6. GPR while at Texas A&M University of ENGS and ENST students. |
|----------------|----------------|----------------|
|                | ENGS          | ENST          | Combined |
| N              | 128           | 128           | 256      |
| Mean           | 2.76          | 2.84          | 2.8      |
| Median         | 2.73          | 2.82          | 2.78     |
| SD             | 0.6           | 0.54          | 0.57     |
by gender (Table 4-8). Students with the highest GPRs, as a group, are women (n = 57) who were in the 80th percentile or higher and who scored greater than 1,100 on the SAT. These women had a mean GPR of 3.08. The poorest performing group, with mean GPR of 2.38, were men who were below the 80th percentile of their graduating high school class but who scored above 1,100 on the SAT. In some cases, SAT scores predict GPR, but in other cases, high school rank seems to be a better predictor.

e. Retention rates and graduation rates

Full data on retention and graduation rates are presented in Appendix M. We summarize these data into selected retention and graduation rate for ENGS and ENST programs. Table 4-9 shows first-time (freshman) retention and graduation rates for ENGS and ENST students.

Table 4-10 shows transfer student retention and graduation rates for ENGS and ENST students for 1-year retention and 2-year graduation.

f. Exit survey results

We have conducted an exit survey since 2010 (Appendix N) obtaining nearly 250 valid responses, or 63% of our total degrees awarded. We use the exit survey to generate data we use in program assessment. We also report these data to the environmental faculty for discussion.
The exit survey asks graduating seniors to respond to several questions on a Likert scale ranging from “strongly agree” to “strongly disagree.” We present data on groups of questions. Below, we present excerpts from the exit survey (Figure 4-7). For ENGS students, their responses indicate very strong agreement that the degree “prepared me for my future career” (~88%, n = 143), that it was a “positive experience” (~97%, n = 144), and that the academic advisor understood the curriculum and communicated effectively (100%, n = 142). Results for “I felt part of a community” were lower. Importantly, the “I would choose this major again” question

<table>
<thead>
<tr>
<th>All</th>
<th>High School Percentile &lt;=80</th>
<th>High School Percentile &gt;80</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAT &gt;1100</td>
<td>34</td>
<td>2.52</td>
</tr>
<tr>
<td>SAT &lt;=1100</td>
<td>32</td>
<td>2.78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Female</th>
<th>High School Percentile &lt;=80</th>
<th>High School Percentile &gt;80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>GPR</td>
<td>Number</td>
</tr>
<tr>
<td>SAT &gt;1100</td>
<td>15</td>
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<tr>
<td>SAT &lt;=1100</td>
<td>14</td>
<td>2.78</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Male</th>
<th>High School Percentile &lt;=80</th>
<th>High School Percentile &gt;80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>GPR</td>
<td>Number</td>
</tr>
<tr>
<td>SAT &gt;1100</td>
<td>19</td>
<td>2.38</td>
</tr>
<tr>
<td>SAT &lt;=1100</td>
<td>18</td>
<td>2.79</td>
</tr>
</tbody>
</table>

Table 4-8. Comparison of ENGS and ENST students according to high school class rank and performance on SAT.

Table 4-9. First-time retention and graduation rates for ENGS and ENST.

<table>
<thead>
<tr>
<th>Initial Cohort #</th>
<th>2 year % retained in major</th>
<th>4 yr % graduated in major</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort Year</td>
<td>ENGS</td>
<td>ENST</td>
</tr>
<tr>
<td>2003</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2004</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2005</td>
<td>6</td>
<td>4</td>
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<tr>
<td>2006</td>
<td>7</td>
<td>5</td>
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<tr>
<td>2007</td>
<td>7</td>
<td>5</td>
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<tr>
<td>2008</td>
<td>12</td>
<td>9</td>
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<tr>
<td>2009</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>2010</td>
<td>19</td>
<td>17</td>
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<tr>
<td>2011</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>2012</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>2013</td>
<td>26</td>
<td>22</td>
</tr>
</tbody>
</table>
generated strongly agree and agree responses for ~81% of students.

Similar responses appear for ENST students relating to agreement that the degree “prepared me for my future career” (~89%, n = 108), that it was a “positive experience” (~98%, n = 108), and that the academic advisor understood the curriculum and communicated effectively (100%, n = 107) (Figure 4-8). Similar to ENGS responses, results for “I felt part of a community” were less enthusiastic. Additionally, the “I would choose this major again” question generated strongly agree and agree responses for ~77% of students, slightly less than for ENGS students. F15

We also ask reflective questions about the skills gained during the degree program: data analysis, evaluation of different sources of information, skills (laboratory, field, or computational), oral communication,
Figure 4-7. ENGS responses to select exit survey questions.

**My education in the Environmental Programs at Texas A&M . . .**

- ENGS prepared me for my future career
- ENGS was overall a positive experience
- My academic advisor understood and effectively communicated curriculum, graduation requirements, and university and college policies and procedures.
- I felt part of a community with the other students, faculty, and staff in the program.
- I would choose this major if I were to start my undergraduate career over again.

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree
and written communication. We have high responses for all categories except “taught me appropriate field, laboratory and/or computation skills (Figure 4-9, Figure 4-10).

**Figure 4-8.** ENST responses to select exit survey questions.

**My education in Environmental Programs at Texas A&M...**

- **ENST prepared me for my future career**
- **ENST was overall a positive experience**
- **My academic advisor understood and effectively communicated curriculum, graduation requirements, and university and college policies and procedures.**
- **I felt part of a community with the other students, faculty, and staff in the program.**
- **I would choose this major if I were to start my undergraduate career over again.**

[Bar charts for each statement with options: Strongly agree, Agree, Neutral, Disagree, Strongly disagree]
Figure 4-9. ENGS responses to select exit survey questions focusing on skills.

My education in the Environmental Programs at Texas A&M . . .

- taught me to analyze/collect/interpret data
- taught me to critically evaluate different sources of information
- taught me appropriate field, laboratory and/or computation skills
- taught me effective oral communication skills
- taught me effective written communication skills

Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree
We ask about knowledge gained regarding understanding science-policy links, depth of knowledge about environmental science, knowledge of branches of environmental science, and ethical dimensions of environmental

Figure 4-10. ENST responses to select exit survey questions focusing on skills.

My education in Environmental Programs at Texas A&M . . .

- taught me to analyze/collect/interpret data
- taught me to critically evaluate different sources of information
- taught me appropriate field, laboratory and/or computation skills
- taught me effective oral communication skills
- taught me effective written communication skills

[Bar chart showing responses]

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree
issues. Figures 4-11 and 4-12 show high responses to these questions, although our only external validation for some of these questions is found in our evaluation of GEOS 405 posters and papers.

**Figure 4-11.** ENGS responses to select exit survey questions focusing on knowledge.

*My education in the Environmental Programs at Texas A&M*

- has provided me with an understanding of the links between environmental science and public policy
- has provided me with a considerable depth of knowledge about environmental science
- has provided me with an understanding of various branches of environmental social science
- taught me to appreciate the ethical dimensions of environmental issues
- gave me hands-on research experience with faculty and/or grad students

- [ ] Strongly agree  - [ ] Agree  - [ ] Neutral  - [ ] Disagree  - [ ] Strongly disagree
**g. Careers**

We obtained career and employment data from 106 graduates using self-reported information from LinkedIn profiles. This represents approximately 27% of our 395 students awarded ENGS or ENST degrees since 2002, although we have obtained information from more ENGS students as a percentage of degrees awarded since 2002. We do not know if this gap exists because ENST students do not create LinkedIn profiles or because we have been less successful at linking with ENST students compared to ENGS graduates. It is possible that students without LinkedIn profiles are either not employed or not employed in environmental professions, but we have no definitive conclusions. Table 4-11 presents a summary of full data provided in Appendix O.

Self-reported professions fall into five categories. In the area of environmental...
consulting, our graduates work as scientists, laboratory technicians, GIS specialists, and consultants. They help clients in areas of remediation, compliance, soil and emissions testing, real estate due diligence, site assessment, mitigation, and remediation.

ENGS and ENST graduates working for natural resources firms are mainly in petroleum and natural gas, where they occupy positions such as scientist, data specialist, health and safety officer, compliance advisor or coordinator, and field or environmental engineer. Many graduates in this area report that their activities are directly related to the boom in petroleum production in the Eagle Ford Shale and other hydrocarbon basins in Texas.

Government employment includes federal, state, county, and city agencies, with strong focus on Texas, especially the state’s Commission on Environmental Quality (TCEQ), where former students are employed as environmental investigators. Former students working for municipal governments have titles such as water manager, environmental specialist, planner, and GIS specialist. Some government employment is not environmental.

Non-profit or education includes students who are seeking advanced degrees (science; social science; professional school). We believe that many more former students are in this area, but they do not have a LinkedIn profile at present. Some former students in this area are teachers in primary or secondary education; others have titles such as GIS technician or laboratory technician.

Finally, services, information and media represent a category including environment-related and unrelated professions at firms ranging from transnational corporations to start-up environmental firms.

Table 4-11. Self-reported employment categories of ENGS and ENST graduates.

<table>
<thead>
<tr>
<th>Category</th>
<th># ENGS students</th>
<th># ENST students</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Consulting</td>
<td>15</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>13</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>Government</td>
<td>12</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Non-profit or Education</td>
<td>15</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>Services, Information &amp; Media</td>
<td>9</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>42</td>
<td>106</td>
</tr>
<tr>
<td>% total graduates since 2002</td>
<td>30.5</td>
<td>22.7</td>
<td>26.8</td>
</tr>
</tbody>
</table>
Chapter 5. Concluding Observations

Environmental Programs in the College of Geosciences (ENVP) have awarded 185 Environmental Studies (BS, ENST) and 210 Environmental Geosciences (BS, ENGS) degrees since 2002. Our students have pursued careers in government, natural resources, and environmental consulting, while others have continued their education in graduate or professional schools. Exit survey data indicate high satisfaction with our degree programs.

Most programmatic challenges were overcome in the mid 2000s by appointing a permanent director and academic advisor, who provided responsiveness to organizational demands and excellence in student advising. The degree programs are inclusive, as evidenced by the high percentage of change-of-major and transfer students, while maintaining opportunities for high-impact learning experiences through internships, research hours, required capstone course, and study abroad offerings.

Our key challenges include revising the model for faculty engagement and appointment terms as means to continue to offer a timely and high-quality curricula that will continue to attract freshman, transfer students, and change-of-major students. Possible solutions include reforming the appointment process to the environmental faculty, including ENGS and ENST curricular needs as hiring criteria in the academic departments, and hiring non-tenure-track faculty with secondary teaching duties in one of the academic departments.

Acknowledgements: The program director thanks Emily Dykes, Vatche Tchakerian, Andrew Millington, Don Collins, Shari Yvon-Lewis, Brendan Roark, John Nielsen-Gammon, Ethan Grossman, Karen Riedel, and Noura Randle for assistance in the production of this document.
MEMORANDUM

TO:       Dr. David Prior, Dean
          College of Geosciences
          Dr. Mary Jo Richardson
          Associate Dean for Academic Affairs

SUBJECT:  Official Coordinating Board Approval of the Bachelor of Science in Environmental Geoscience

Attached is the official letter from the Coordinating Board approving the Bachelor of Science degree in Environmental Studies and the Bachelor of Science in Environmental Geoscience. The Coordinating Board also approved changing the name of the Environmental Studies option under the existing B.S. in Geography to Geographic Information Science. Please note this name change carries a CIP Code change from 03.0102.20-Environmental Sciences/Studies to 45.0702.00-Cartography.

The two new degree programs are approved for implementation effective September 1, 2002.

Congratulations on the approval of these two new programs.

RGD:pac

Attachments

cc:       Dr. Ray M. Bowen
          Dr. Leo Sayavedra
          Dr. Mark Weichold
          Ms. Jeanette Phariss
          Ms. Linda Lacey
          Mr. Don Wood
June 11, 2002

Dr. Ray M. Bowen
President
Texas A&M University
1246 TAMU
College Station, TX  77843-1246

Dear Dr. Bowen:

I am pleased to approve the creation of two new degree programs at Texas A&M University: a Bachelor of Science in Environmental Studies and a Bachelor of Science in Environmental Geoscience. In addition, I approve your changing the name of the existing program in Environmental Studies (leading to the B.S. degree with major in Geography) to a program in Geographic Information Science (leading to the same degree). A document detailing relevant reporting information is enclosed.

I understand that the costs to the institution to implement these programs and this name change can be met within the amounts specified in the proposals you submitted.

Best wishes to you, your faculty, and staff as they implement these new programs.

Cordially,

[Signature]

Don W. Brown

Enclosure

c:  Leo Sayavedra
    Ronald G. Douglas
    Paul R. Meyer

OFFICE OF THE PRESIDENT

JUN 13 2002

AN EQUAL OPPORTUNITY EMPLOYER
INFORMATION SHEET

The following information is provided in connection with recent action(s) taken by the Texas Higher Education Coordinating Board and reported to your institution in a letter from Don W. Brown dated June 11, 2002.

ACTION: TEXAS A&M UNIVERSITY

On June 11, 2002, the Coordinating Board approved at the staff level the request from Texas A&M University to create Bachelor of Science degrees with majors in Environmental Studies and Environmental Geoscience, and to change the name of the existing program in Environmental Studies leading to the Bachelor of Science degree with major in Geography to a program in Geographic Information Science leading to the Bachelor of Science degree with major in Geography.

Administrative Units Affected:

<table>
<thead>
<tr>
<th>Academic Unit</th>
<th>Academic Unit #</th>
<th>Action</th>
<th>Effective Date</th>
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</thead>
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<tr>
<td>College of Geosciences</td>
<td>1320</td>
<td>Create Environmental Geoscience and Environmental Studies programs within College</td>
<td>September 1, 2002</td>
</tr>
<tr>
<td>Department of Geography</td>
<td>1250</td>
<td>Rename existing program with Department</td>
<td>September 1, 2002</td>
</tr>
</tbody>
</table>

Programs Affected:

<table>
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<th>Degree Program</th>
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<th>Action</th>
<th>Effective Date</th>
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</thead>
<tbody>
<tr>
<td>BS in Environmental Geoscience</td>
<td>03.0102.20</td>
<td>Create program</td>
<td>September 1, 2002</td>
</tr>
<tr>
<td>BS in Environmental Studies</td>
<td>03.0102.20</td>
<td>Create program</td>
<td>September 1, 2002</td>
</tr>
<tr>
<td>Program in Environmental Studies leading to BS in Geography</td>
<td>03.0102.20</td>
<td>Phase out program</td>
<td>August 1, 2007</td>
</tr>
<tr>
<td>Program in Geographic information Science leading to BS in Geography</td>
<td>45.0702.00</td>
<td>Create program</td>
<td>September 1, 2002</td>
</tr>
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</table>

Notes:

These changes will affect the way your institution reports courses, programs, and degrees to the Coordinating Board. Please inform the appropriate reporting personnel of these changes.

If you have any questions about this action or about your institution’s program inventory, please contact:

Dr. Paul R. Meyer
Director of Academic Affairs
(512) 427-6226
Internet: Paul.Meyer@thecb.state.tx.us

Appendix A-85
Dr. Don Brown  
Commissioner  
The Texas Higher Education Coordinating Board  
P.O. Box 12788  
Austin, Texas 78711  

Dear Dr. Brown:

Enclosed are an original and three copies of a degree program proposal seeking approval for Texas A&M University to establish a new degree program leading to a Bachelor of Science in Environmental Geoscience.

The proposed B.S. will allow Texas A&M University, with its existing faculty, to offer an interdisciplinary science degree that embraces all the disciplines of geosciences (atmospheric sciences, geography, geology and geophysics, and oceanography) and educates students in a rigorous interdisciplinary degree. The new degree program will complement the existing degrees offered in the departments within the College of Geosciences. Students pursuing this degree would select one of four environmental themes for an 18-hour concentration: coastal studies, water in the environment, human interaction with the land, or climate change. Graduates in this degree program will be able to fill the need for technically trained in industry, environmental and engineering consulting firms, nongovernmental organizations, and governmental regulatory agencies. The Bureau of Labor Statistics projects that the number of environmentally related positions will grow 10 to 20 percent between 1998 and 2008. Six public institutions, including two within The Texas A&M University System, and three private institutions in Texas offer an Environmental Science degree. The new degree will be the only Environmental Geoscience degree in the state.

We project an enrollment of 15 students in the first year of the program and as many as 105 students by the fifth year. We expect that 72 students will enter the program as new students and 50 would enter through a change in curriculum from other majors. Through attrition, seven students would leave the program and ten would graduate in the first five years. Enrollment will increase through advising, advertising, and word-of-mouth. The program would not require new faculty or facilities. The estimated costs for the first five years of the program are $601,000. Texas A&M University will provide $586,000 in reallocated funds as start-up funding for the program. If enrollment projections are met, estimates of formula fund revenue over the first five-year period would be $356,526. Thus, the total projected revenue over the first five years would be $942,526, which exceeds the projected costs for the same period by more than $340,000. Students will be admitted to the degree program through the prescribed procedures of Texas A&M University and all applicants will meet minimum entrance requirements as set by Texas A&M University. Because Texas A&M University is strategically poised to offer a new B.S. program and has the faculty and resources to offer the requested degree, we believe it is in the best interest of the institution and the state to
Dr. Brown  
January 2, 2002  
Page 2  

offer a B.S. degree in Environmental Geoscience.

This proposal has been reviewed by all the appropriate internal committees and was approved for submission to The Texas Higher Education Coordinating Board by The Texas A&M University System Board of Regents at its December 6–7, 2001, meeting. The Board of Regents believes that this request to offer a B.S. in Environmental Geoscience is justified and that Texas A&M University should be authorized to offer the degree. The Board of Regents’ signed copy of the “Certification for Approval of New Bachelor’s and Master’s Level Degree Programs by the Commissioner” is enclosed together with a letter certifying adequacy of financing.

As this proposal receives staff review, I will be pleased to supply any additional information that may be needed. Also, feel free to contact Dr. Ronald G. Douglas, Executive Vice President and Provost, if I am not available to answer specific questions.

Sincerely,

[Signature]

Ray M. Bowen  
President

RMB:nls
Enclosures

cc:  Dr. Leo Sayavedra  
Ms. Verna Dewees  
Dr. Ronald G. Douglas  
Dr. David B. Prior  
Dr. Mary Jo Richardson  
Dr. Mark H. Weichold  
Ms. Jeanette Phariss  
Ms. Linda Lacey /  
Mr. Don Wood  
Ms. Nancy Sawtelle
Appendix A-88

Dr. Don Brown
Commissioner
The Texas Higher Education Coordinating Board
P.O. Box 12788
Austin, Texas 78711

Dear Dr. Brown:

Enclosed are an original and three copies of a degree program proposal seeking approval for Texas A&M University to establish a new degree program leading to a Bachelor of Science in Environmental Studies.

The proposed B.S. will allow Texas A&M University, with its existing faculty, to offer an interdisciplinary degree in geosciences (atmospheric sciences, geography, geology and geophysics, and oceanography) that focuses on the aspects of environmental policy critical to successful planning and use of the earth's resources. Complementing the present degree offerings in the College of Geosciences, the new degree will prepare students to fill the increasing number of environmentally related positions in the job market. No policy-oriented degree programs exist at public institutions in Texas. Three private institutions offer environmental studies degrees.

We project an enrollment of 20 students in the first year of the program and as many as 130 students by the fifth year. Many of the students entering the program will enter through a change of curriculum from other majors. Enrollment will increase through advertising, advertising, and word-of-mouth. The program would not require new faculty or facilities. The estimated costs for the first five years of the program are $691,000. Texas A&M University will provide $540,400 in reallocated funds as start-up funding for the program. If enrollment projections are met, estimates of formula fund revenue over the first five-year period would be $566,363. Thus, the total projected revenue over the first five years would be $1,106,763, which exceeds the projected costs for the same period by more than $400,000. Students will be admitted to the degree program through the prescribed procedures of Texas A&M University and all applicants will meet minimum entrance requirements as set by Texas A&M University. Because Texas A&M University is strategically poised to offer a new B.S. program and has the faculty and resources to offer the requested degree, we believe it is in the best interest of the institution and the state to offer a B.S. degree in Environmental Studies.

This proposal has been reviewed by all the appropriate internal committees and was approved for submission to The Texas Higher Education Coordinating Board by The Texas A&M University System Board of Regents at its December 6–7, 2001, meeting. The Board of Regents believes that this request to offer a B.S. in Environmental Studies is justified and that Texas A&M University should be authorized to
offer the degree. The Board of Regents' signed copy of the "Certification for Approval of New Bachelor's and Master's Level Degree Programs by the Commissioner" is enclosed. I have also enclosed a letter certifying adequacy of financing for this proposed degree program.

As this proposal receives staff review, I will be pleased to supply any additional information that may be needed. Also, feel free to contact Dr. Ronald G. Douglas, Executive Vice President and Provost, if I am not available to answer specific questions.

Sincerely,

Ray M. Bowen
President

RMB:nls
Enclosures
cc:  Dr. Leo Sayavedra
     Ms. Verna Dewees
     Dr. Ronald G. Douglas
     Dr. David B. Prior
     Dr. Mary Jo Richardson
     Dr. Mark H. Weichold
     Ms. Jeanette Phariss
     Ms. Linda Lacey
     Mr. Don Wood
     Ms. Nancy Sawtelle
GEOS 105
Introduction to Environmental Geoscience
Credit: 3

Lecture: MWF (time to be announced)
Instructors: Drs. D. Collins (drcollins@tamu.edu), E. Grossman (e-grossman@tamu.edu), R. Stewart (rstewart@ocean.tamu.edu), V. Tchakerian (v-tchakerian@tamu.edu)
First offering: Spring 2002
Prerequisites: None
Course web-page: geoweb.tamu.edu/courses/geos105/

Course description: Key concepts and generalizations of global environmental issues within an Earth systems science framework including global climate change, air pollution, land and coastal degradation, water resources and pollution, and habitat loss; environmental ethics, economics, and politics; environmental issues in Texas.

Course philosophy: Rather than simply fact-based, the format is designed to generate discussion. Background material on Earth system science is presented within the framework of specific environmental problems. For example, factors controlling climate (e.g., greenhouse gases, orbital parameters, albedo) will be introduced to promote understanding of global warming.


Outside reading: Outside readings will be available from the web (e.g., Kyoto Protocol Treaty at http://www.unfccc.de/fccc/docs/cop3/protocol.pdf)

Reading: Reading will be assigned for most class periods. Students are expected to do the reading before coming to class, and are responsible for it on "pop" quizzes.

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final exam</td>
<td>30%</td>
</tr>
<tr>
<td>Homework and quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Short paper</td>
<td>10%</td>
</tr>
</tbody>
</table>

90–100=A, 80–89=B, 70–79=C, 60–69=D, ≤59=F
If necessary, test grades will be curved. Additional curving of grades at the semester's end will be at the discretion of the professor.

Tests: There will be two tests during the semester plus a cumulative final exam.

Short paper: A four-page paper based on current environmental issues is required. Students should use at least four sources for these papers.

Quizzes: There will be scheduled and non-scheduled ("pop") quizzes.

Academic Dishonesty: Disciplinary action will be taken in cases of academic dishonesty. It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty. Every act of academic dishonesty dilutes the value of the TAMU degree you hope to receive. Examples of scholastic dishonesty include 1) acquiring answers for any assigned work or examination from any unauthorized source, 2) observing the work of other students during any examination, 3) providing answers for any assigned work or examination when not specifically authorized to do so, 4) failing to credit sources used in a work product in an attempt to pass off the work as one's own, 5) attempting to receive credit for work performed by another, including papers obtained in who or in part from individuals or other sources, and 6) fabrication of information. For more information, see TAMU Student Rules (http://student-rules.tamu.edu/part1.htm).

Americans with Disabilities Act (ADA): The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among

Appendix A-90
other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room 126 of the Koldus Building, or call 845-1637.

Preliminary Course Outline (#weeks)

- Environmental economics ethics, and regulation (1)
  - Start class with a case student (Movie? A Civil Action or Erin Brockovich)
- CO₂ and global warming (3)
  - Earth’s heat budget
  - Climate variability on the scale of months to million years
  - Greenhouse gases, aerosols, clouds
  - Global warming?
  - Fossil fuel CO₂-sources and sinks
  - Case study: Potential climate change in Texas
- Air pollution (2)
  - Structure and composition of the atmosphere
  - Urban and regional air pollution
  - Acid precipitation
  - Stratospheric ozone depletion
- Land degradation and desertification (2)
  - Drought, desiccation, and desertification
  - Human dimension of global land degradation (famine, etc.)
  - Soil erosion, wind erosion, salinization, etc.
- Oceans and coastal margins (2)
  - Coastal pollution
  - Overfishing
- Water quality and resources (2)
  - Hydrologic cycle
  - Case studies of surface and groundwater pollution
- Energy Resources (1)
  - Fossil fuels
  - Nuclear energy
  - Alternative energy (e.g., wind, geothermal)
- Environmental issues in Texas’ future (1)

Alternative Textbooks:

Outside Reading Materials:

Examples of Relevant Web Sites:
Global Climate Change Briefing Book, Congressional Research Service.
Environmental Protection Agency. http://www.epa.gov/
U.S. Department of Energy, Office of Biological and Environmental Research.
Texas Natural Resources Conservation Commission. http://www.tnrrc.state.tx.us/
Texas Water Development Board. http://www.twdb.state.tx.us/

Appendix A-91
GEOS 405 Environmental Geosciences, (3 Credits)

General Course Description: Dynamics and human interactions with near-surface environments including land, atmosphere and oceans through problem-based learning; interdisciplinary environmental problem topic, e.g. water quality, urbanization, coastal development, or environmental pollution; geoscience techniques used for monitoring human-geosphere interaction.

The class will be organized in a 2:2 format, two hours of lecture and one two-hour laboratory per week.

Instructor: Faculty from ATMO, GEOG, GEOL/GEOP, or OCNG
Lecture: MW 10:20-11:10
Laboratory: TW 1:50-4:40
Prerequisites: GEOS 105; junior or senior classification

Example Textbooks:


Groundwater and Soil Cleanup: Improving Management of Persistent Contaminants; Committee on Technologies for Cleanup of Subsurface Contaminants in the DOE Weapons Complex, National Research Council; 304 pages; 1999.

New Strategies for America's Watersheds; Committee on Watershed Management, National Research Council; 328 pages; 1999.

Exams: Weekly assignments covering problem sets, short essays, and presentations. Three project reports covering the three watershed systems.

Grading: Weekly assignments/projects are each 50% of your grade. (A: 91–100%; B: 81–90%; C: 71–80%; D: 61–70%; F: <61%).

ADA Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room 126 of the Koldus Building. The phone number is 845-1637.

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If you have any further questions concerning plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty."
Watersheds and Water Quality

Section One: The Nature of the Geologic Environment: Watersheds

1. Introduction (1 week)
   1.1 Chapter Objectives
   1.2 Anthropogenic interactions with watersheds
   1.3 Policy and environmental law

2. Fluvial Geomorphology and the Near-surface Geologic Environment (1.5 weeks)
   2.1 Chapter Objectives
   2.2 Fluvial Geomorphology
   2.3 Environmental impact assessments/land use planning
   2.4 Skills: Estimating land use change through time

3. Hydrology and Water Resources (1.5 weeks)
   3.1 Chapter Objectives
   3.2 Components of the hydrologic cycle: reservoirs and transfer processes
   3.3 Surface water hydrology
   3.4 Hydrogeology of subsurface environments
   3.5 Groundwater resources
   3.4 Skills: Predicting water resources

4. Hydrologic & Biogeochemical Control of Water Quality (2 weeks)
   4.1 Chapter Objectives
   4.2 Geochemical reactions that control natural water quality
   4.3 Skills: Statistical analysis of water chemistry

Section Two: Perturbed Fluvial Environments

5. Contaminants in Watersheds (2 weeks)
   5.1 Chapter Objectives
   5.2 Sources and properties of anthropogenic contaminants in surface waters
   5.3 Major biogeochemical processes affecting contaminant fate in watersheds
   5.4 Skills: Risk assessment

6. Watersheds and Nonpoint-source Pollutants (2 weeks)
   6.1 Chapter Objectives
   6.2 Nutrients
   6.3 Metals
   6.4 Organics
   6.5 Skills: Predicting nutrient effects on ecosystems

Section Three: Case Studies

7. Case Studies (4 weeks)
   10.1 Chapter Objectives
   10.2 Columbia River and Puget Sound
   10.3 Trinity River and Galveston Bay
   10.4 Mississippi River
GEOS 105 – Fall Semester 2014
INTRO TO ENVIRONMENTAL GEOSCIENCES
Dr. Vatche P. Tchakerian
Time: TR: 2:20-3:35
Place: O&M 112
Office: O&M 803E
Office Hours: TR 11-12:00
v-tchakerian@tamu.edu

This freshmen course is an introductory survey of some of the major global environmental issues, from a geosciences perspective. Special emphasis placed on understanding such key themes as sustainability, ecosystems, biogeography, climate change, air and water pollution, land degradation and erosion, as well as issues related to energy and biodiversity, among others. Many of the above themes will be illustrated through case studies to highlight the significant challenges presented by the variety of environmental issues that affect our lives.

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Content Outline #</th>
<th>Book Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Course Overview and History of Environmentalism</td>
<td>1, 2</td>
</tr>
<tr>
<td>2</td>
<td>Concepts of Sustainability, Equilibrium and Ecosystems</td>
<td>2, 6, 7</td>
</tr>
<tr>
<td>3</td>
<td>Biogeography, Soils and the Critical Zone</td>
<td>7, 10</td>
</tr>
<tr>
<td>4</td>
<td>Biodiversity and Conservation; Forests</td>
<td>11, 14</td>
</tr>
<tr>
<td>5</td>
<td>Global Environmental Changes</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>Global Environmental Changes</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Atmospheric Pollution</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>Issues in Global Water and River Basins</td>
<td>12</td>
</tr>
<tr>
<td>9</td>
<td>Issues in Global Water and River Basins</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>Coastal and Marine Environmental Issues</td>
<td>7, 12</td>
</tr>
<tr>
<td>11</td>
<td>Land Degradation/Desertification and Erosion</td>
<td>13</td>
</tr>
<tr>
<td>12</td>
<td>Dust, Mineral Aerosols and Human Health</td>
<td>19, 13</td>
</tr>
<tr>
<td>13</td>
<td>The Geography of Energy</td>
<td>15, 16</td>
</tr>
<tr>
<td>14</td>
<td>Urban Environmental Issues</td>
<td>17</td>
</tr>
<tr>
<td>15</td>
<td>Epilogue and Reflections</td>
<td></td>
</tr>
</tbody>
</table>

# I reserve the right to slightly change the lecture outlines as needed

**Required Materials:**


b) Kolbert, Elizabeth, *Field Notes from a Catastrophe: Man, Nature, and Climate Change* (2006), Bloomsbury Publications (you will be provided your own copy of this book in class).

**Intellectual Purpose:** This is a freshmen level introductory class and is particularly focused towards our ENST and ENGS majors, who will continue on and enroll in subsequent lower and upper-division GEOS courses with major geoscience components and concepts – and thus the emphasis is on illustrative case studies as an introduction to major global environmental issues, both scientific and societal.

**CLASS PERFORMANCE:**

There will be 2 exams and a final in GEOS 105 (see the outline and details below). The exams consist primarily of multiple choice, matches, and other objective questions, and cover lecture materials, audio-visuals, assignments, text and any additional readings and homework assigned in class. Exams are worth 100 points. The final exam is comprehensive and covers all the course materials. You will be reading *Field Notes from a Catastrophe: Man, Nature, and Climate Change*, throughout the semester and I will give you a number of take home assignments based on some of the chapters/themes in the book. Additionally, you will see some questions from the book in the exams. There will also be some other take home assignments and exercises.

** Final grades will be determined based on the following requirements (I do not expect to curve grades, although it is possible based upon the class outcomes so I reserve that judgment):**

- 90% and above = A
- 80-89% = B
- 70-79% = C
- 60-69% = D
- 59% and less = F
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For rules and regulations regarding class attendance, behavior, make-up work, missed classes and exams, and others, please consult the 2014-2015 Texas A&M University Regulations Handbook at http://student-rules.tamu.edu/

Electronic devices
Please do not use electronic devices (cell phones, tablets etc.) in class. Please silence all cell phones and do not text/message during class (remember the Aggie Honor Code). Do not use the internet during class.

**Total points for the course are 350 arranged as follows:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>100 pts.</td>
<td>Tuesday, October 7</td>
</tr>
<tr>
<td>Exam 2</td>
<td>100 pts.</td>
<td>Tuesday, November 6</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100 pts.</td>
<td>Wednesday, December 17, 1-3</td>
</tr>
<tr>
<td>Book Questions and Homework</td>
<td>50 pts.</td>
<td>Throughout the semester</td>
</tr>
</tbody>
</table>

**Learning Outcomes:**

At the end of the semester, you will be able to:

a) Learn key environmental challenges facing humans today such as global warming, ozone depletion, soil erosion, sea-level rise, melting of glaciers and sea ice, deforestation, among many others.

b) Explain such concepts as sustainability, biodiversity and global biomes.

c) Describe the role that ecosystems play in directly and indirectly providing resources for humans.

d) Apply critical thinking to evaluate data, facts, and arguments.

e) Describe the advantages and disadvantages of different sources of energy.

f) Be able to discuss the different types of air and water pollution and land degradation impacting the environment and the surface of the planet.

g) Comprehend some of the major environmental issues facing urban areas.

h) Be able to write short essays on various global environmental issues.

**Assessment and Evaluation:**

* The fundamentals of the topics outlined above will be discussed during lectures. The appropriate sections in the textbook and other reading materials should be used for further study and reference. Overall, you will be evaluated through exams and short take home exercises.

* We will use illustrative case studies (and videos) to highlight some of the major global environmental challenges facing our planet and its inhabitants. These will be incorporated in your exams.

* There will be a 4 to 5 take-home questions based largely on the Field Notes from a Catastrophe: Man, Nature, and Climate Change book, as well as a few other assigned homework. I will give you more directions in class but you should plan on reading the book after week 4. You will also see questions from the book on all the exams – many of the topics covered in the Kolbert book will also be discussed during lectures.
Course title and number  GEOS 105-500 Introduction to Environmental Geoscience
Term  Spring 2015
Meeting times and location  MWF @ 9:10 to 10:00 pm. Room 110 in the O & M BUILDING

Course Description and Prerequisites
Key concepts and generalizations of global environmental issues within an Earth systems science framework including climate change, air pollution, land and coastal degradation, water resources and pollution, and habitat loss; environmental ethics, economics and politics; environmental issues in Texas. Enrollment preference will be given to environmental geoscience and environmental studies majors.

Learning Outcomes
At the end of the course, the student will be able to:
1. Define sustainability.
2. Describe the role that ecosystems play in directly and indirectly providing resources for humans.
3. Explain the major threats to sustainability posed by human population growth and climate change.
4. Describe the advantages and disadvantages of different sources of energy.
5. Apply critical thinking to evaluate data, facts, and arguments.

Instructor Information
Dr. Daniel C. O. Thornton  (Associate Professor)
Earth System & Microbial Ecology (ESME) laboratory,
518 & 521 (main lab), 518BA (office off main lab), Eller O & M Building
Office hours: After class or by appointment (email me)
Office phone: 1-979-845-4092
Email: dthornton@ocean.tamu.edu
http://oceanography.tamu.edu/Directory/Faculty/Bio/DanThornton.html

Textbook and/or Resource Material
Reading will be assigned from the following recommended book:
Christensen N (2013). The Environment and You. Pearson,
There is a brand new second edition of this book (January 2014), which you could also use.

Required reading:
You don’t need to purchase this book as it will be provided to you by the College of Geosciences.
Grading Policies

Exams
There will be 3 exams during the course. These will all be in the form of multiple choice and short answer questions.

Exam 1 will be worth 90 points and will test you on the first section of the course.

Exam 2 will be worth 100 points; this will cover material from the second section of the course.

Exam 3 will be a final worth 150 points. The final exam will be divided into two parts; the first part will test you on the third section of the course and the second half will potentially test you on any aspect of the course (i.e. second half will be cumulative)

Bring a pen, pencil and eraser to exams. You will not be allowed to use notes, the text, calculators, computers, smart phones, tablets or any other electronic device during the exams. Cheating will result in a 0 for that exam.

Illness, or a university approved excuse, are considered valid reasons for missing an exam. Written university excuses should be presented before the exam. For an illness, an official written excuse from the student medical center or other medical official will be required. University approved excuses are listed at: http://student-rules.tamu.edu. You will not receive credit if you take your exams in a different section of GEOS 105. If you cannot attend a make-up exam, then you may be required to write an essay.

Homework Assignments
There will be 8 homework assignments over the semester. Each homework will be worth 20 points, with a total of 160 points. Each homework will be due in class one week after it was set and points may be deducted for late work. Hand in paper copies unless instructed otherwise.

Grading Scale
Your final grade will be based on the 3 exams and your homework. A percentage grade will be calculated based on your total points out of the 500 possible points ((90 exam 1) + (100 exam 2) + (150 final exam) + (160 points homework) = 500).

The grading divisions will be: A (90 -100 %), B (80 - 89 %), C (70 – 79 %), D (60 – 69 %) and F (0 – 59 %). There will be no extra credit. The grades may be curved at the end of the semester.

In-class quizzes and assignments
There will be short in-class quizzes and assignments held in class. The purpose of these is to help you learn the material and get you thinking. They will not count towards your final grade.

Attendance
Attendance is strongly encouraged as you will be examined on material presented in the lectures. Occasionally, I may pass around an attendance sheet in class for you to sign in. Attendance will not contribute towards your final grade.

Electronic devices
Please do not use electronic devices (cell phones, tablets etc.) in class. Silence all cell phones and do not text/message during class. Do not use the internet during class.

Other Pertinent Course Information
You must have a TAMU email account (NetID) and know how to access your email and eCampus through the Howdy web page. I will send out important notices concerning the course by email and post them on eCampus. Copies of my lecture notes, your grades and other information will be posted on eCampus. You can log in to eCampus from the Howdy Portal (available at the top of the TAMU homepage: http://www.tamu.edu/) using your Net ID and password. You can contact me by email using the above address. If you have any questions, for example you didn’t understand something presented during the lectures, you can stop by my office during office hours and I’ll be happy to help.
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### Course Topics, Calendar of Activities, Major Assignment Dates

This table shows the class schedule for Introduction to Environmental Geoscience 105-500. In the unlikely event that major changes need to be made to the schedule you will be notified by email and by postings on eCampus as soon as possible.

<table>
<thead>
<tr>
<th>Week 1: 21, 23 January</th>
<th>Introduction</th>
<th>Introduction, sustainability and science (Christensen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2: 26, 28, 30 January</td>
<td>Policy</td>
<td>Policy, Environmental Ethics, Economics, and policy (Christensen)</td>
</tr>
<tr>
<td>Week 3: 2, 4, 6 February</td>
<td>Ecology</td>
<td>Ecology, Ecological Communities (Christensen)</td>
</tr>
<tr>
<td>Week 4: 9, 11, 13 February</td>
<td>Ecology</td>
<td>Ecology, Ecosystem Ecology (Christensen)</td>
</tr>
<tr>
<td>Week 5: 16, 18, 20 February</td>
<td>Human population</td>
<td>Human population growth (Christensen)</td>
</tr>
<tr>
<td>Week 6: 23, 25, 27 February</td>
<td>Climate Change</td>
<td>Climate Change (Christensen)</td>
</tr>
<tr>
<td>Week 7: 2, 4, 6 March</td>
<td>Air Quality</td>
<td>Air quality (Christensen)</td>
</tr>
<tr>
<td>Week 8: 9, 11, 13 March</td>
<td>Water</td>
<td>Water, Water (Christensen)</td>
</tr>
<tr>
<td>Week 9: SPRING BREAK</td>
<td>SPRING BREAK</td>
<td>SPRING BREAK</td>
</tr>
<tr>
<td>Week 10: 23, 25, 27 March</td>
<td>Agriculture</td>
<td>Agriculture and the Ecology of food (Christensen)</td>
</tr>
<tr>
<td>Week 11: 30 March, 1 April</td>
<td>Energy</td>
<td>Energy, Nonrenewable energy and electricity, Renewable energy and energy conservation (Christensen)</td>
</tr>
<tr>
<td>Reading day on 3 April: no class</td>
<td>Exam 2: Monday 30 March</td>
<td>Exam 2: Monday 30 March</td>
</tr>
<tr>
<td>Week 12: 6, 8, 10 April</td>
<td>Energy</td>
<td>Energy, Nonrenewable energy and electricity, Renewable energy and energy conservation (Christensen)</td>
</tr>
<tr>
<td>Week 13: 13, 15, 17 April</td>
<td>Urban Ecosystems</td>
<td>Urban ecosystems (Christensen)</td>
</tr>
<tr>
<td>Week 14: 20, 22, 24 April</td>
<td>Waste</td>
<td>Waste management (Christensen)</td>
</tr>
<tr>
<td>Week 15: 27, 29 April, 1 May</td>
<td>Human health</td>
<td>Human health, The environment and human health (Christensen)</td>
</tr>
<tr>
<td>Week 16: 4 April Tuesday 5 May</td>
<td>Finishing off topics &amp; conclusions</td>
<td>Finishing off topics &amp; conclusions</td>
</tr>
</tbody>
</table>

7, 8, 11, 12 May are final examination days.

Final exam for GEOS 105-500 scheduled on Friday 8 May 8:00 – 10:00 am

(check date and time using Howdy).
Environmental Geosciences  
**GEOS 405 Spring 2014**

**Instructor:** Dr. Don Collins  
**Office:** 205 O&M  
**Office Hours:** M,T,W 1:00 – 2:00 and by appointment  
**Phone:** 845-6324  
**Email:** dcollins@tamu.edu

**Teaching Assistant:** Emily Vandewalle  
**Office:** CSA 201  
**Office Hours:**  
**Email:** vand1113@neo.tamu.edu

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**Course Description**

Dynamics and human interactions with near-surface environments including land, atmosphere and oceans through problem-based learning; interdisciplinary environmental problem topic, for example water quality, urbanization, coastal development, or environmental pollution; geoscience techniques used for monitoring human-geosphere interaction.

In this course, students will use a problem-based learning exercise to investigate local environmental change and gain firsthand experience with a number of research techniques.

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**Meeting Time and Locations**

Lecture and laboratory meetings, Tuesday and Thursday 9:35-10:50 pm  
Room O&M 206

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**Textbooks and Readings**

This is a writing intensive course and while there are no assigned textbook book I expect that you are already capable of analytical writing and you will be graded on the effective communication of your research results primarily in written form. As a result the book below will prove extremely helpful as you navigate the assignments in this course.

Other reading assignments as well as helpful sources of information will come from a number of sources, including:


Investing in The Elements of Style by William Strunk, Jr. with revisions, an introduction, and a chapter on writing by E. B. White is recommended as it is an excellent book to help your writings. You can purchase this book at many different places.

Most importantly students will also be expected to do considerable self-directed readings as part of the problem-based learning exercise.

Grading

A student's course grades will be based on several components including an individual research project (assessed in three parts as a manuscript, and oral and poster presentations); a whole class project reporting on the Environmental Programs; weekly journal/notebook as well as participation in class discussions. The grading breakdown is presented below.

This course is the intellectual capstone experience of the Environmental Geosciences and Environmental Studies Degrees. The required work and grading standards will reflect the course's standing in these degree programs.

Grading breakdown

Research Manuscript 45%
Oral Presentations of Research 10%
Illustrated Poster of Research 25%
Class report on the Environmental Programs (ENGS and ENST) 10%
Weekly Journal/Notebook 5%
Class participation 5%

Grading Scheme

The typical grading scheme for this course has the following cutoffs.

≥90% A, 80-89% B, 70-79% C, 60-69% D, <60% F

An average performance in the class will earn a satisfactory grade.
Research Project

The cornerstone learning experience of the course is a research project that you will undertake as part of a group (but which has individual as well as group assessment components). In problem-based learning, students are presented with a real world situation in which they must collaborate with each other to provide either answers to scientific questions or solutions to real-world problems. This process develops content knowledge, as students must seek out information to arrive at the answer(s). Problem-solving skills will be acquired as students work through the process. In this class, the field trips and/or laboratory work will provide opportunities for data collection that will form the bases of the projects.

The role of the instructor in problem-based learning is one of a facilitator providing resources, guidance and occasionally, instruction. As such, large amounts of the class time are unstructured, but students are expected to be prepared to fully utilize this time through discussions with their peers and the instructor.

Information on problem-based learning is available in several places on the web. Good introductions to the basics and educational rational behind PBL included:

Problem-Based Learning: an Introduction  

Fieldwork and Laboratory Work

This course does require some amount of fieldwork and/or laboratory work depending on which projects the students choose to work on. Both the field and laboratory work will be done after the appropriate safety discussions and training are reviewed with the instructor. If there are ever any safety concerns or any questions about the best field or laboratory practices every individual involved has the right and responsibility to stop the work and ensure all is safe before continuing.

Both fieldwork and laboratory work may require extended working hours. In some cases or some projects require weekend long, overnight fieldtrips for which participation is expected. Scheduling will depend in part upon a number of internal and external issues.

Evaluation

Over the course of the semester small groups, facilitated by the instructor, will develop and implement a strategy to answer a research question. Each student will be evaluated based on a written manuscript, oral presentations, and a poster presentation. The latter two elements will be done in collaboration with students working on the same topic and the evaluations will be for the entire group in each case. The written manuscript (research report) will be written up and assessed individually.
To ease production of the written report, throughout the semester each student will produce and present a portion of the report which will then be commented on by the instructor and via a peer review process. Feedback from the instructor, as well as class and group discussions, will serve to guide the teams and individuals on how best to improve the quality of the final report.

The written reports are to follow the submission guidelines for the Journal Marine Ecology Progress Series (http://www.int-res.com/journals/meps/guidelines-for-meps-authors/). Manuscripts failing to meet the guidelines will be returned unread.

Note all due dates, especially those in red are subject to change.

**Research Paper 45%**

A breakdown of the grading of the problem-based learning exercise is as follows and detail grading rubrics for each graded component will be provided. All written assignments will be edited for content and proofread for grammar. Subsequent drafts will be evaluated based in part on the students’ incorporation of those corrections.

1. **Outline**
   Each student will prepare a detailed outline of the manuscript detailing your research project. The outline should focus on the first three parts of a typical research manuscript; the introduction, literature review and methods. It should also include a list of figures.
   **Due Date** Week 8, March 4, 2014

2. **First Draft**
   Each student will prepare a first draft of the manuscript detailing your research project. The first draft should focus on the first three parts of a typical research manuscript; the introduction, literature review and methods.
   **Due Date** Week 11, March 25, 2014

3. **Second Draft**
   Each student will prepare a second draft of the manuscript detailing your research project. This draft should fix issues in the introduction, literature review and methods sections identified in the first draft by your instructor. The draft should also include a first draft of the final three parts of a typical research manuscript; results, analysis and conclusions. You will also be graded on the quality of your peer-review of another student’s paper.
   **Due Date** Week 12, April 8, 2014

4. **Final version**
   Based on instructor feedback provided on the first two drafts, each student will compose a final version of the manuscript presented as a
Appendix B-105

Publication ready manuscript formatted to Marine Ecology Progress Series specifications for submitting manuscripts to be reviewed.

Due Date: Week 15, May 2, 2014

According to the Texas A&M University Definitions of Academic Misconduct, plagiarism is the appropriation of another person’s ideas, processes, results or words without giving appropriate credit (http://aggiehonor.tamu.edu). You should credit your use of anyone else’s words, graphic images, or ideas using standard citation styles. If I should discover that you have failed to properly credit sources or have used a paper written by someone else, I will recommend that you receive an F in this course. The Aggie Honor System Office processes for adjudication and appeals can be found at aggiehonor.tamu.edu.

Oral Presentation

Each small group will prepare and present oral presentation/s to be delivered to the entire class. The presentation will use computer-based presentation software such Microsoft’s PowerPoint. A grading rubric will be made available for your guidance.

Due Date: On going over the semester

Illustrated Paper Presentation

Each group will present their work as a poster presentation. The poster will include a summary of the problem, data, methods, and findings presented in poster format. Each group will prepare a 36” x 48” poster following guidelines to be distributed in class. Each group should be prepared to discuss the poster with interested parties. A grading rubric will be made available for your guidance.

Poster Presentations: During scheduled final exam period on May 2

Class report on Environmental Geosciences/Studies programs

The goal of this assignment is to provide the entire class with the experience of producing a consensus document. A consensus document is one that attempts to provide the consensus view of experts in a particular field. Arguably, the most important consensus document in the environmental field today is the Intergovernmental Panel on Climate Change (IPCC) report on global warming. The National Research Council (NRC) produces documents on a number of scientific topics of interest for political and other reasons. In the case of this class you are the experts on the state of the Environmental Geosciences/Studies program and as such you will write a consensus document on the strengths, weaknesses, and challenges of the programs.

Due Date: Week 8, March 8, 2014

Weekly Journal and notebook

5%

Spring 2014 – GOES 405 – syllabus
Each student is expected to keep a journal detailing their work on the PBL problem and any reflections students have about the class. The main purpose of the journal is to encourage students to learn to track of their research activities through journaling and maintaining a lab/field note book.

**Due Date:** Week 15 April 29, 2014

Class participation 5%

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**Communication Skills Development**

Developing good communication skills is an important part of becoming a professional in the Environmental Field and improving student communication skills is a major aim of the course.

**Written**

Written communication skills will a focus of the course. Individual writing skills will be developed.

The needed skill of collaborative writing will be developed through the group writing associated with the problem-based learning exercise detailed above. In addition, all students will participate in developing a consensus document. This semester, the group will produce a consensus report on the state of the Environmental Geoscience/Studies degrees and develop a persuasive written argument proposing changes to the programs.

**Oral**

The course will develop oral presentation skills through short oral presentation and through a public poster session for geosciences faculty at the end of the course.

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TUESDAY LECTURE TOPICS</th>
<th>THURSDAY LECTURE TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction to Course</td>
<td>Introduction to research topics</td>
</tr>
<tr>
<td>Jan 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>Research topic selection.</td>
<td>How to read a scientific paper</td>
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<tr>
<td>Jan 21</td>
<td></td>
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</tr>
<tr>
<td>Week 3</td>
<td>Research Topic Hypothesis Definition</td>
<td>Facilitated student research on project</td>
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<tr>
<td>Jan 28</td>
<td></td>
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<tr>
<td>Week 4</td>
<td>Research project planning</td>
<td>Research project planning</td>
</tr>
<tr>
<td>Feb 4</td>
<td></td>
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<tr>
<td>Week 5</td>
<td>Facilitated student research on project</td>
<td>Introduction to writing a consensus report on</td>
</tr>
<tr>
<td>Feb 11</td>
<td></td>
<td>environmental programs</td>
</tr>
<tr>
<td>Week 6</td>
<td>Facilitated student research on project</td>
<td>Class work on consensus report</td>
</tr>
<tr>
<td>Feb 18</td>
<td>In class progress reports</td>
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<tr>
<td>Week 7</td>
<td>Facilitated student research on project</td>
<td>Class work on consensus report</td>
</tr>
<tr>
<td>Feb 25</td>
<td>In class progress reports</td>
<td></td>
</tr>
<tr>
<td>Week 8</td>
<td>Outline of individual research paper due</td>
<td>Consensus report due</td>
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<tr>
<td>March 4</td>
<td></td>
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<tr>
<td>Week 9</td>
<td>March 11</td>
<td>Spring Break</td>
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<tr>
<td>Week 10</td>
<td>March 18</td>
<td><strong>Progress reports – oral presentations</strong></td>
</tr>
<tr>
<td>Week 11</td>
<td>March 25</td>
<td>Facilitated student research on project</td>
</tr>
<tr>
<td>Week 12</td>
<td>April 1</td>
<td>How to prepare a poster</td>
</tr>
<tr>
<td>Week 13</td>
<td>April 8</td>
<td>2nd draft of individual research paper due (results, analysis and conclusions) for peer review</td>
</tr>
<tr>
<td>Week 14</td>
<td>April 15</td>
<td>Peer review of 2nd draft due</td>
</tr>
<tr>
<td>Week 15</td>
<td>April 22</td>
<td>Facilitated student research on project</td>
</tr>
<tr>
<td>Week 16</td>
<td>April 29</td>
<td><strong>Poster Session Friday May 2 12:30-2:30</strong></td>
</tr>
</tbody>
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**PLAGIARISM POLICY:** As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own,
even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, http://student-rules.tamu.edu/, under the section "Scholastic Dishonesty."

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> “An Aggie does not lie, cheat or steal, or tolerate those who do.”

Faculty must report any academic dishonesty issues that arise to the Aggie Honor System Office even if the case is resolved between the Faculty and the student. That will be considered the student's first offense. A second offense will lead to more severe consequences.

If you have any questions about the University’s Scholastic Dishonesty Policy, please review the Student Rules or see me. Information about the Aggie Honor program is http://aggiehonor.tamu.edu.

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**Additional Student Support**

There are numerous other student support organizations on campus including

**Center for Academic Excellence and Academic Assistance Clearinghouse**
525 Blocker, 845-2724, [http://www.tamu.edu/cae](http://www.tamu.edu/cae)

**Student Counseling Service**
Cain Hall, 845-4427, [http://scs.tamu.edu](http://scs.tamu.edu)
Student Counseling Helpline 5:00pm-8:00am: 845-2700

**University Writing Center**
There is obviously a lot of writing assignments in this course and this in part reflects the College QEP is “Aggies commit to communicate.”

The University Writing Center (UWC), located in Evans Library 1.214, offers help to writers at any stage of the writing process including brainstorming, researching, drafting, documenting, revising, and more; no writing concern is too large or too small. These consultations are highly recommended but are not required. While the UWC consultants will not proofread or edit your papers, they will help you improve your proofreading and editing skills. If you visit the UWC, take a copy of your writing assignment, a hard copy of your draft or any notes you may have, as well as any material you need help with. To find out more about UWC services or to schedule an appointment, call 458-1455, visit the web page at writingcenter.tamu.edu, or stop by in person. Please do not hesitate to ask me if you have any problems or if you are having any trouble in the class, see a faculty member or advisor before it becomes a problem.
Environmental Geosciences (GEOS 405) Syllabus (Fall ‘14)

Instructor: Dr. Ethan L. Grossman
Meeting Time: Tuesday and Thursday 9:35-10:50 pm
Locations: O&M 206 for joint meetings, and Halb. 304 for Grossman section meetings
Materials are available at eCampus.tamu.edu

Office: 210 Halbouty
Office Hours: M 1-2 PM, Tu 4:30-5:30 PM, F 1-2 PM and by appointment
Phone: 845-0637
Email: e-grossman@tamu.edu

Teaching Assistant: Alex VanPlantinga
Office: Halb. 206
Office Hours: M through F 2-3 PM
Email: acvanp@gmail.com

Course Description
Dynamics and human interactions with near-surface environments including land, atmosphere and oceans through problem-based learning; interdisciplinary environmental problem topic, for example water quality, urbanization, coastal development, or environmental pollution; geoscience techniques used for monitoring human-geosphere interaction.

In this course, students will use a problem-based learning exercise to investigate local environmental change and gain firsthand experience with a number of research techniques.

Textbooks and Readings
This is a writing intensive course and while there is no assigned textbook, you are expected to be capable of analytical writing and you will be graded on the communication of your research results, primarily in written form. As a result the book and booklet below will prove extremely helpful as you navigate the assignments in this course.


Other helpful sources of information include:


Most importantly students will also be expected to do substantial self-directed readings as part of the problem-based learning exercise.
Grading
This course is the intellectual capstone experience of the Environmental Geosciences and Environmental Studies Degrees. The required work and grading standards reflect the course’s standing in these degree programs.

Course grades will be based on several components with a strong emphasis on the individual research project and skills communicating that research. The grading breakdown is presented below.

**Grading breakdown**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Manuscript</td>
<td>40%</td>
</tr>
<tr>
<td>Research Proposal</td>
<td>7%</td>
</tr>
<tr>
<td>Oral Presentations of Research</td>
<td>10%</td>
</tr>
<tr>
<td>Illustrated Poster of Research</td>
<td>20%</td>
</tr>
<tr>
<td>Class report on the Environmental Programs (ENGS and ENST)</td>
<td>8%</td>
</tr>
<tr>
<td>Weekly Journal/Notebook</td>
<td>5%</td>
</tr>
<tr>
<td>Class participation</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Grading Scheme**

The typical grading scheme for this course has the following cutoffs.

\[ \geq 90\% \text{ A, } 80-89\% \text{ B, } 70-79\% \text{ C, } 60-69\% \text{ D, } <60\% \text{ F} \]

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**Research Project**

The cornerstone learning experience of the course is a research project that you will undertake as part of a group (but which has individual as well as group assessment components). In problem-based learning, students are presented with real world situations and must collaborate to provide answers to scientific questions and solutions to real-world problems. This process develops content knowledge, as students must seek out information to arrive at the answer(s). Problem-solving skills will be acquired as students strive to solve logistical, analytical, and scientific problems. **Field trips and/or laboratory work** provide opportunities for data collection that form the basis of the projects.

The instructor’s role in problem-based learning is one of facilitator providing resources, guidance and occasionally, instruction. As such, large amounts of the class time are unstructured, but students are expected to be prepared to fully utilize this time through discussions with peers and the instructor.

Information on problem-based learning is available in several places on the web. A good introduction to the basics and educational rational behind PBL is:


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**Fieldwork and Laboratory Work**

This course requires fieldwork and/or laboratory work depending on the projects chosen. Both field and laboratory work will be done after the appropriate safety discussions and training are reviewed with the instructor. If there are ever any safety concerns or any questions about the best field or laboratory practices every individual involved has the right and responsibility to stop the work and ensure all is safe before continuing. **Safety first!!**
Both fieldwork and laboratory work will likely require extended working hours. Projects could require weekend long, overnight fieldtrips for which participation is expected. A best effort will be made to permit as much participation as possible.

Evaluation

Over the course of the semester small groups, facilitated by the instructor, will develop and implement a strategy to answer a research question. Each student will be evaluated based on a research proposal, written manuscript, oral presentations, and a poster presentation. The latter two elements will be done in collaboration with students working on the same topic and the evaluations will be for the entire group in each case. The written manuscript (research report) will be written and assessed individually.

To ease production of the written report, throughout the semester each student will produce and present a portion of the report which will subjected to instructor and peer review. Feedback from the instructor, as well as class and group discussions, will serve to guide the teams and individuals on how best to improve the quality of the final report.

The written reports are to follow the submission guidelines for Environmental Science and Technology (ES&T) (http://pubs.acs.org/paragonplus/submission/esthag/esthag_authguide.pdf). Each student will be given one free late pass to hand in written assignment up to 24 hours late. (You must notify me by email or phone before the deadline to use your late pass.) Otherwise, late assignments will likely be given a grade of 0.

Note: all due dates are subject to change.

Research Proposal

Students will prepare a 350 word research proposal with an introduction, statement of objectives, discussion of samples and methods, references, and a budget. More information will be provided in the Research proposal handout.

Due Date Week 5, Sept. 30, 2014

Research Paper

A breakdown of the grading of the problem-based learning exercise is as follows and detailed grading rubrics for each graded component will be provided. All written assignments will be edited for content and proofread for grammar. Subsequent drafts will be evaluated based in part on the students’ incorporation of those corrections.

1. Outline 4 points
   Each student will prepare a detailed outline of the manuscript detailing your research project. The outline should focus on the first three parts of a typical research manuscript: the introduction, literature review, and methods. It should also include a list of figures.
   Due Date Week 8, Oct. 21, 2014

2. First Draft 4 points
   Each student will prepare a first draft of the manuscript detailing your research project. The first draft should focus on the first three parts of a typical research manuscript: the introduction, literature review and methods. Each draft should be formatted as a research article to Environmental Science and Technology (ES&T) (http://pubs.acs.org/paragonplus/submission/esthag/esthag_authguide.pdf)
   Due Date Week 11, Nov. 11, 2014
3. **Second Draft**  
Each student will prepare a second draft of the manuscript detailing your research project. This draft should fix issues in the introduction, literature review and methods sections identified in the first draft by your instructor. The draft should also include a first draft of the final three parts of a typical research manuscript; results, analysis and conclusions. You will also be graded on the quality of your peer-review of another student’s paper.  
**Due Date**: Week 13, Nov. 25, 2014

4. **Final draft**  
Based on instructor feedback on the first two drafts, each student will compose a final draft of the manuscript addressing the comments on previous drafts.  
**Due Date**: Week 15, Dec. 12, 2014

**Oral Presentation**  
Each small group will prepare and present oral presentation/s to be delivered to the entire class. The presentation will use computer-based presentation software such Microsoft’s PowerPoint. A grading rubric will be made available for your guidance.  
**Due Date**: On-going throughout the semester

**Poster Presentation**  
Each group will present their work as a poster presentation. The poster will include a summary of the problem, data, methods, and findings presented in poster format. Guidelines for the 36” x 48” poster will be distributed in class. A grading rubric will be made available for your guidance.  
**Poster Presentations**: During scheduled final exam period on Dec. 12 (12:30-2:30 PM).

**Class report on Environmental Geosciences/Studies programs**  
The goal of this assignment is to provide the entire class with the experience of producing a consensus document. A consensus document is one that attempts to provide the consensus view of experts in a particular field. Arguably, the most important consensus document in the environmental field today is the Intergovernmental Panel on Climate Change (IPCC) report on global warming. The National Research Council (NRC) produces documents on a number of scientific topics of interest for political and other reasons. In the case of this class you are the experts on the state of the Environmental Geosciences/Studies program and as such you will write a consensus document on the strengths, weaknesses, and challenges of the programs.  
**Due Date**: Week 8, Oct. 21, 2014

**Weekly Journal and notebook**  
Student are expected to keep a journal detailing their research and any reflections about the class. The main purpose of the journal is to encourage students to learn to track of their research activities through journaling and maintaining a lab/field note book.  
**Due Date**: Week 15 Dec. 9, 2014

**Class participation**  

**Communication Skills Development**  
Developing good communication skills is critical to becoming a professional in the Environmental Field and improving student communication skills is a major aim of the course.
Written
Written communication skills will be a focus of the course. Individual writing skills will be developed. Collaborative writing skills will be developed through the group writing associated with the problem-based learning exercise detailed above. In addition, all students will participate in developing a consensus report on the state of the Environmental Geosciences/Studies degrees and develop a persuasive written argument proposing changes to the programs.

Oral
The course will develop oral presentation skills through a short oral presentation and through a public poster session for College of Geosciences faculty at the end of the course.

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TUESDAY</th>
<th>THURSDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction to Course</td>
<td>Introduction to research topics</td>
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<tr>
<td>Sept. 2</td>
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</tr>
<tr>
<td>Week 2</td>
<td>Research topic selection.</td>
<td>How to read a scientific paper</td>
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<tr>
<td>Sept. 9</td>
<td></td>
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</tr>
<tr>
<td>Week 3</td>
<td>Research Topic Hypothesis Definition</td>
<td>Facilitated student research on project</td>
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<tr>
<td>Sept. 16</td>
<td></td>
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</tr>
<tr>
<td>Week 4</td>
<td>Research project planning</td>
<td>Research project planning</td>
</tr>
<tr>
<td>Sept. 23</td>
<td></td>
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</tr>
<tr>
<td>Week 5</td>
<td>Facilitated student research on project</td>
<td>Introduction to writing a consensus report on</td>
</tr>
<tr>
<td>Sept. 30</td>
<td>Research proposal due</td>
<td>environmental programs</td>
</tr>
<tr>
<td>Week 6</td>
<td>Facilitated student research on project</td>
<td>Class work on consensus report</td>
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<tr>
<td>Oct. 7</td>
<td>In class progress reports</td>
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</tr>
<tr>
<td>Week 7</td>
<td>Facilitated student research on project</td>
<td>Class work on consensus report</td>
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<tr>
<td>Oct. 14</td>
<td>In class progress reports</td>
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<td>Week 8</td>
<td>Outline of individual research paper due</td>
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<tr>
<td>Oct. 21</td>
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<tr>
<td>Week 9</td>
<td>Progress reports – oral presentations</td>
<td>Progress reports – oral presentations</td>
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<tr>
<td>Oct. 28</td>
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<tr>
<td>Week 10</td>
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<tr>
<td>Nov. 4, 6</td>
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<tr>
<td>Week 11</td>
<td>Facilitated student research on project</td>
<td>1st draft of individual research paper due</td>
</tr>
<tr>
<td>Nov. 11, 13</td>
<td></td>
<td>introduction, literature review and methods</td>
</tr>
<tr>
<td>Week 12</td>
<td>How to prepare a poster</td>
<td>Facilitated student research on project</td>
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<tr>
<td>Nov. 18, 20</td>
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<tr>
<td>Week 13</td>
<td>2nd draft of individual research paper due</td>
<td>Happy Thanksgiving!!</td>
</tr>
<tr>
<td>Nov. 25</td>
<td>for peer review (complete draft)</td>
<td></td>
</tr>
<tr>
<td>Week 14</td>
<td>Oral presentations of student research</td>
<td>Oral presentations of student research</td>
</tr>
<tr>
<td>Dec. 2, 4</td>
<td>Peer review of 2nd draft due</td>
<td></td>
</tr>
<tr>
<td>Week 15</td>
<td>Facilitated student research on project</td>
<td>Poster Session Friday Dec. 12, 12:30-2:30</td>
</tr>
<tr>
<td>Dec. 9, 12</td>
<td></td>
<td>Final Paper Due</td>
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Environmental Geosciences  
GEOS 405 Spring 2014 Costa Rica

Instructor: Dr. Brendan Roark  
Office: 811 O&M  
Office Hours: Monday 11-12, Thursday 11-12 and by appointment  
Phone: 862-1775  
Email: broark@geos.tamu.edu

Teaching Assistant: Emily Vandewalle  
Office: CSA 201  
Office Hours:  
Email: vand1113@neo.tamu.edu

Course Description
Dynamics and human interactions with near-surface environments including land, atmosphere and oceans through problem-based learning; interdisciplinary environmental problem topic, for example water quality, urbanization, coastal development, or environmental pollution; geoscience techniques used for monitoring human-geosphere interaction.

In this course, students will use a problem-based learning exercise to investigate local environmental change and gain firsthand experience with a number of research techniques.

Meeting Time and Locations
Lecture and laboratory meetings, Tuesday and Thursday 9:35-10:50 pm  
Room O&M 206

Textbooks and Readings
This is a writing intensive course and while there are no assigned textbook book I expect that you are already capable of analytical writing and you will be graded on the effective communication of your research results primarily in written form. As a result the book below will prove extremely helpful as you navigate the assignments in this course.

Other reading assignments as well as helpful sources of information will come from a number of sources, including:


Investing in *The Elements of Style* by William Strunk, Jr. with revisions, an introduction, and a chapter on writing by E. B. White is recommended as it is an excellent book to help your writings. You can purchase this book at many different places.

**Most importantly students will also be expected to do considerable self-directed readings as part of the problem-based learning exercise.**

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**Grading**

A student’s course grades will be based on several components including an individual research project (assessed in three parts as a manuscript, and oral and poster presentations); a whole class project reporting on the Environmental Programs; weekly journal/notebook as well as participation in class discussions. The grading breakdown is presented below.

This course is the intellectual capstone experience of the Environmental Geosciences and Environmental Studies Degrees. The required work and grading standards will reflect the course’s standing in these degree programs.

**Grading breakdown**

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<td>Weekly Journal/Notebook</td>
<td>5%</td>
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<td>Class participation</td>
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**Grading Scheme**

The typical grading scheme for this course has the following cutoffs.

≥90% A, 80-89% B, 70-79% C, 60-69% D, <60% F

An average performance in the class will earn a satisfactory grade.
Research Project

The cornerstone learning experience of the course is a research project that you will undertake as part of a group (but which has individual as well as group assessment components). In problem-based learning, students are presented with a real world situation in which they must collaborate with each other to provide either answers to scientific questions or solutions to real-world problems. This process develops content knowledge, as students must seek out information to arrive at the answer(s). Problem-solving skills will be acquired as students work through the process. In this class, the field trips and/or laboratory work will provide opportunities for data collection that will form the bases of the projects.

The role of the instructor in problem-based learning is one of a facilitator providing resources, guidance and occasionally, instruction. As such, large amounts of the class time are unstructured, but students are expected to be prepared to fully utilize this time through discussions with their peers and the instructor.

Information on problem-based learning is available in several places on the web. Good introductions to the basics and educational rational behind PBL included:

Problem-Based Learning: an Introduction

Fieldwork and Laboratory Work

This course does require some amount of fieldwork and/or laboratory work depending on which projects the students choose to work on. Both the field and laboratory work will be done after the appropriate safety discussions and training are reviewed with the instructor. If there are ever any safety concerns or any questions about the best field or laboratory practices every individual involved has the right and responsibility to stop the work and ensure all is safe before continuing.

Both fieldwork and laboratory work may require extended working hours. In some cases or some projects require weekend long, overnight fieldtrips for which participation is expected. Scheduling will depend in part upon a number of internal and external issues.

Evaluation

Over the course of the semester small groups, facilitated by the instructor, will develop and implement a strategy to answer a research question. Each student will be evaluated based on a written manuscript, oral presentations, and a poster presentation. The latter two elements will be done in collaboration with students working on the same topic and the evaluations will be for the entire group in each case. The written manuscript (research report) will be written up and assessed individually.
To ease production of the written report, throughout the semester each student will produce and present a portion of the report which will then be commented on by the instructor and via a peer review process. Feedback from the instructor, as well as class and group discussions, will serve to guide the teams and individuals on how best to improve the quality of the final report.

The written reports are to follow the submission guidelines for the Journal Marine Ecology Progress Series (http://www.int-res.com/journals/meps/guidelines-for-meps-authors/). Manuscripts failing to meet the guidelines will be returned unread.

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Note all due dates, especially those in red are subject to change.

**Research Paper**  
45%

A breakdown of the grading of the problem-based learning exercise is as follows and detail grading rubrics for each graded component will be provided. All written assignments will be edited for content and proofread for grammar. Subsequent drafts will be evaluated based in part the students incorporation of those corrections.

1. **Outline**  
10%

   Each student will prepare a detailed outline of the manuscript detailing your research project. The outline should focus on the first three parts of a typical research manuscript; the introduction, literature review and methods. It should also include a list of figures.

   **Due Date** Week 8, March 4, 2014

2. **First Draft**  
10%

   Each student will prepare a first draft of the manuscript detailing your research project. The first draft should focus on the first three parts of a typical research manuscript; the introduction, literature review and methods.

   **Due Date** Week 11, March 25, 2014

3. **Second Draft**  
20%

   Each student will prepare a second draft of the manuscript detailing your research project. This draft should fix issues in the introduction, literature review and methods sections identified in the first draft by your instructor. The draft should also include a first draft of the final three parts of a typical research manuscript; results, analysis and conclusions. You will also be graded on the quality of your peer-review of another students paper.

   **Due Date** Week 12, April 8, 2014

4. **Final version**  
60%

   Based on instructor feedback provided on the first two drafts, each student will compose a final version of the manuscript presented as a publication ready
manuscript formatted to Marine Ecology Progress Series specifications for submitting manuscripts to be reviewed.

**Due Date:** Week 15 May 2, 2014

According to the Texas A&M University Definitions of Academic Misconduct, plagiarism is the appropriation of another person’s ideas, processes, results or words without giving appropriate credit (http://aggiehonor.tamu.edu). You should credit your use of anyone else’s words, graphic images, or ideas using standard citation styles. If I should discover that you have failed to properly credit sources or have used a paper written by someone else, I will recommend that you receive an F in this course. The Aggie Honor System Office processes for adjudication and appeals can be found at aggiehonor.tamu.edu.

**Oral Presentation**

Each small group will prepare and present oral presentation/s to be delivered to the entire class. The presentation will use computer-based presentation software such Microsoft's PowerPoint. A grading rubric will be made available for your guidance.

**Due Date:** On going over the semester

**Illustrated Paper Presentation**

Each group will present their work as a poster presentation. The poster will include a summary of the problem, data, methods, and findings presented in poster format. Each group will prepare a 36” x 48” poster following guidelines to be distributed in class. Each group should be prepared to discuss the poster with interested parties. A grading rubric will be made available for your guidance.

**Poster Presentations:** To be determined

**Class report on Environmental Geosciences/Studies programs**

The goal of this assignment is to provide the entire class with the experience of producing a consensus document. A consensus document is one that attempts to provide the consensus view of experts in a particular field. Arguably, the most important consensus document in the environmental field today is the Intergovernmental Panel on Climate Change (IPCC) report on global warming. The National Research Council (NRC) produces documents on a number of scientific topics of interest for political and other reasons. In the case of this class you are the experts on the state of the Environmental Geosciences/Studies program and as such you will write a consensus document on the strengths, weaknesses, and challenges of the programs.

**Due Date:** Week 6, March 8 2014

**Weekly Journal and notebook**

5%
Each student is expected to keep a journal detailing their work on the PBL problem and any reflections students have about the class. The main purpose of the journal is to encourage students to learn to track of their research activities through journaling and maintaining a lab/field note book.

**Due Date:** Week 15 April 29, 2014

**Class participation** 5%

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**Communication Skills Development**

Developing good communication skills is an important part of becoming a professional in the Environmental Field and improving student communication skills is a major aim of the course.

**Written**

Written communication skills will a focus of the course. Individual writing skills will be developed.

The needed skill of collaborative writing will be developed through the group writing associated with the problem-based learning exercise detailed above. In addition, all students will participate in developing a consensus document. This semester, the group will produce a consensus report on the state of the Environmental Geoscience/Studies degrees and develop a persuasive written argument proposing changes to the programs.

**Oral**

The course will develop oral presentation skills through short oral presentation and through a public poster session for geosciences faculty at the end of the course.

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<th>WEEK</th>
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<td>Week 1</td>
<td>Introduction to Course</td>
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<td>Research topic selection.</td>
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<td>Week 8</td>
<td>Outline of individual research paper due</td>
<td>Consensus report due</td>
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Week 9  
March 11  
Spring Break  
Spring Break

Week 10  
March 18  
Progress reports – oral presentations  
Progress reports – oral presentations

Week 11  
March 25  
Facilitated student research on project  
1st draft of individual research paper due (introduction, literature review and methods)

Week 12  
April 1  
How to prepare a poster  
Facilitated student research on project

Week 13  
April 8  
2nd draft of individual research paper due (results, analysis and conclusions) for peer review  
Oral presentations of student research

Week 14  
April 15  
Peer review of 2nd draft due  
Oral presentations of student research

Week 15  
April 22  
Facilitated student research on project  
Facilitated student research on project

Week 16  
April 29  
Facilitated student research on project  
Poster Session Friday May 2 12:30-2:30  
Final Paper Due

I reserve the right to make changes to the course schedule due to unforeseen circumstances.

COURSE AND UNIVERSITY POLICIES

CLASS ATTENDANCE: The University views class attendance as the responsibility of the student. While attendance is not part of your assessment, your performance is directly related to your attendance - the more classes you miss the lower your grade will likely be. Students who miss class are responsible for getting the notes from a classmate. University rules regarding attendance (e.g. excused absences) can be found at http://student-rules.tamu.edu/rule07 . Students who are requesting an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code (See Rule 24).

EMAIL: All Texas A&M students should use their neo email accounts when emailing the instructor or the teaching assistant. Class announcements may be sent out via the neo email system and it is your responsibility to check your account regularly.

THE AMERICANS WITH DISABILITIES ACT (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

COPYRIGHT POLICY: All materials used in this class are copyrighted. These materials include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless permission is expressly granted.

PLAGIARISM POLICY: As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own,
even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, [http://student-rules.tamu.edu/](http://student-rules.tamu.edu/), under the section "Scholastic Dishonesty."

**ACADEMIC DISHONESTY:** Texas A&M has a Scholastic Dishonesty policy to which both students and faculty must comply.

> “An Aggie does not lie, cheat or steal, or tolerate those who do.”

Faculty must report any academic dishonesty issues that arise to the Aggie Honor System Office even if the case is resolved between the Faculty and the student. That will be considered the student's first offense. A second offense will lead to more severe consequences.

If you have any questions about the University’s Scholastic Dishonesty Policy, please review the Student Rules or see me. Information about the Aggie Honor program is [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).

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**Additional Student Support**

There are numerous other student support organizations on campus including

**Center for Academic Excellence and Academic Assistance Clearinghouse**
525 Blocker, 845-2724, [http://www.tamu.edu/cae](http://www.tamu.edu/cae)

**Student Counseling Service**
Cain Hall, 845-4427, [http://scs.tamu.edu](http://scs.tamu.edu)
Student Counseling Helpline 5:00pm-8:00am: 845-2700

**University Writing Center**

There is obviously a lot of writing assignments in this course and this in part reflects the College QEP is “Aggies commit to communicate.”

The University Writing Center (UWC), located in Evans Library 1.214, offers help to writers at any stage of the writing process including brainstorming, researching, drafting, documenting, revising, and more; no writing concern is too large or too small. These consultations are highly recommended but are not required. While the UWC consultants will not proofread or edit your papers, they will help you improve your proofreading and editing skills. If you visit the UWC, take a copy of your writing assignment, a hard copy of your draft or any notes you may have, as well as any material you need help with. To find out more about UWC services or to schedule an appointment, call 458-1455, visit the web page at writingcenter.tamu.edu, or stop by in person. Please do not hesitate to ask me if you have any problems or if you are having any trouble in the class, see a faculty member or advisor before it becomes a problem.
Appendix C: Program Reforms

Summary Report of visit to TAMU College of Geosciences 6-8 February 2008 to review the Environmental undergraduate degree programs

Bruce C. Coull
Dean Emeritus, School of the Environment, University of South Carolina
Past President (2006-07), US Council of Environmental Deans and Directors

My comments are grouped into the following categories: administrative structure, curricula and student perceptions.

Administrative Structure

Currently, the Environmental programs at TAMU Geosciences depend mostly on two sources of altruism: a) the faculty who teach/advise/worry about the programs and, b) the Department Chairs who allow their faculty to teach/advise/worry about the programs.

The recent appointment of an “Interim” Director has greatly improved communication/organization of the program, but has not solved the faculty question(s) of: Why should I do this? What are the rewards for being involved in the programs? Will my home Department recognize my contribution when considering tenure, promotion, raises? There are also Department Chair concerns such as, What are they doing in that program? Why are they spending time advising in GEOS/ENST when there are advising needs in the Department? I need them to teach in the Department – I cannot allow them to teach in the programs. The programs compete with my Department for majors and student credit hours decrease when students change from a Departmental major to a GEOS/ENST major and stop taking as many courses in the Department, etc, etc.

Current “volunteer” staffing of the program does not provide a stable, sustainable or viable long-term base for the programs. Beyond retaining the present organization (MODEL 1 – a model I find unacceptable for long-term viability of the program), I suggest three other possible administrative models. For any of the models the recent Council of Environmental Deans and Directors report entitled “Interdisciplinary hiring, tenure and promotion: Guidance for individuals and institution” should be consulted (see http://www.ncseonline.org/CEDD/cms.cfm?id=2042)

No matter what model is used the program requires a permanent director, a staff person, a student advisor and space. I understand Dean Kjerfve and Dr. Millington (and Executive committee) have ongoing discussions on these issues.

MODEL 2. The no money changes hands model. If faculty wanted to be involved in the environmental programs they could have a core appointment in either “Environment” or in their Department. Salary, tenure, promotion, graduate teaching and indirect cost recovery would be in the Department. Student credit hours generated by core Environmental faculty would be retained in the Department. Thus the Program funding would need to come entirely from the Deans Office.
For those with a **core appointment in the Environmental programs**, a written letter of appointment (from the Dean) would stipulate that undergraduate teaching and advising would be in the environmental programs. The core environmental faculty would be the voting faculty of the Environmental program. The letter of appointment should further define that yearly evaluations (salary, retention) by the Environmental Programs director and the Department chairperson would be equally weighted. If the assessments are contrary, the Dean (or a committee appointed by the Dean) would arbitrate. For tenure and promotion a vote of the Environmental Programs core faculty of equal and higher rank (or however defined at TAMU) would be submitted to the Departmental faculty prior to the Departmental vote on the candidate. The Environmental Program vote and the Departmental vote would be passed along as the file moves through the system. If these votes are contrary, and since both votes go to the Dean anyway, the Dean would judge each assessment accordingly and make a recommendation. Should the person leave the University, the program and the department would jointly decide how, and what kind of person, to hire as a replacement. The needs of the Program must be the primary consideration when replacing a core environmental appointment.

If a person was appointed **core faculty in the Department**, they could be termed “Associate Environmental faculty” and be active in the Programs as they and the Program Director saw fit. They would not have a vote on matters of curricula, T & P etc. They could request a letter from the Program Director at evaluation time to recount their contribution to the program, but no such letter is mandated.

In either case (Core faculty or Associated faculty), extant faculty should be given the opportunity to become faculty of the Environmental programs. A new position should be defined as either Core or Associated BEFORE the position is advertised and the candidates need to be informed of the duality. The appointment letter should clearly spell out responsibilities (see above mentioned reference).

**MODEL 3. The some money changes hands model.** This appointment to the Environmental Faculty is similar to Model 2 (Core Environmental Faculty), except that 1/2 of the salary (and associated funds –fringe, travel, supplies, - if there are any?) is in the Environmental Program and 1/2 is in the Department. This means the “Program” has a financial base and therefore would receive 1/2 of dollars generated from student credit hours of said faculty and perhaps from indirect cost recovery. 100% of indirect costs could stay in the Department if the Department was providing research/office space. This model provides a financial incentive to the faculty member to be an active good member of the Environmental faculty/programs - they know ½ of their salary is in Environment and cannot ignore the responsibility to it. This should be a zero-sum-game for the Departments in that the Department no longer pays 1/2 the salary.

T & P would also be different from Model 1 in that the Core Environmental faculty and the Departmental faculty would vote independently and have equal weight. The votes would be passed directly to the Dean. If votes are contrary, the procedure is as in Model
1. Yearly and salary recommendations are as in Model 1 with the Director and Chairperson jointly assessing.

**MODEL 4. The expensive model.** Create a new Department of Environmental Geosciences/Studies with 10+ dedicated faculty. This absolutely insures long-term viability of the undergraduate teaching mission since there would be people hired (or would leave their present Department) to specifically do that. However, it begs an important issue of space for these people, particularly if they are also to conduct fundable research (which we would expect them to do, will need research labs/facilities etc). It also exacerbates the issues of academic turf. This model is in effect at large universities with separate Departments/Colleges/Schools of the Environment. If TAMU were to go to a University wide Environmental degree program – this might be a feasible model. However, since I do not perceive such would happen in the near future, I will not pursue this model further.

**Curricula**

The current GEOS curriculum with its core and tracks is a reasonable curriculum except that there are too many (5) core courses required. Most environmental curricula around the US require a maximum of four (4) core courses. Unless there are plans to entirely revamp the curriculum, which I see as unnecessary until the administrative structure is resolved, I would suggest the core be modified to consist of GEOS 105 and 2 or 3 courses from ATMO 201(202), GEOG/GEOL (202/101; 201/303), OCNG 251(252). With MATH, STAT, CHEM and GEOG 420 and GEOS 405 requirements this is an adequate and sufficient base for the student. This is also relevant to the student complaint that there was great redundancy in the core courses (see next section on student perceptions).

The tracks are best decided by the TAMU faculty. The tracks are reasonable and based on the expertise in the College. Trying to spread the faculty over more tracks may only water them down – you cannot cover everything environmental. The tracks can change over time – I would leave them as is for now.

The ENST curriculum also has the core curriculum overload problem. This should also be reduced. I understand the origin of the curriculum (Geography), but think it could use broadening into Ethics, Anthropology, Economics, Government, International Studies, Environmental Health and perhaps even Business Management (while some of these courses are listed as possible “other courses” – some should be recommended). Because these course are not in Geosciences there would be a loss of student credit hours, but you do your students a disservice by so heavily biasing this major (ENST) to College of Geosciences courses.

The lack of an Ecology course in either degree program (GEOS or ENST) is a glaring omission (caveat - I had no class titles only course numbers. I hope I did not miss an Ecology course). Based on a survey, and a workshop, 40-60 US Environmental Deans and Directors, put Ecology as the top priority course for an undergraduate curriculum in
the environment. There should be faculty in Geosciences competent to teach such a
course and thus not lose student credit hours to another college.

**Student Perceptions**

I met with 14 students (they came and went) for 1½ hours over lunch. In general they
were pleased with the program and were emphatic that it has greatly improved since
Andrew Millington became Interim Director. They cited regular email communication
from him, his willingness to meet with them and discuss their problems and an increased
efficiency in advising. They also had a series of complaints; I list them below.

**Advising.** While advising has improved recently, there were several advising complaints.
They include:

- My advisor only recommends that I take courses in his/her home Department.
- My advisor does not know the curriculum.
- My advisor was not technologically capable of finding my record on the computer
  system.
- My advisor was assigned. I changed tracks. I need to change advisors, but I can’t.

**Course Access.**

- The courses I need are not given when I need to take them
- Can only take approved courses. e.g. Fluvial Geomorphology is not approved for
  the water track. Student was not allowed to take it. (Students need to be made aware of
  the ability to substitute courses - many did not know they could do that.)
- There are pre-requisites for courses suggested that I do not have. I cannot take all
  the pre-requisites to take an ECON course.
- We need a list of technical electives
- Math is too hard (I lectured back that they needed it to be a competent GEOS
  major; I was not popular).

**Core curriculum.**

“There is incredible redundancy in the core curriculum.” (This is a direct quote
and was unanimously agreed upon by the 10 students in the room at the time).
I was bored by the second core course.

**Sense of community.** All the students felt that GEOS/ENST majors had little sense of
community. They often were in very different courses thus they do not go through the
curriculum as a cohort. There was no place to meet together, study together, party (?)
together. While students in one of the College’s Departments were in a unit, they were
not. They urged that there be formal space and events for them, for example a lounge
area, a forum on jobs, a forum on graduate school admission, a forum on the degree and
curriculum, a seminar by Professor X on a topic of interest to them.
**Internships/Scholarships/REU’s** - They requested internships be developed for the majors. They also wanted to be kept informed of scholarship opportunities at TAMU/Texas and REU opportunities both at TAMU and elsewhere.

**My perceptions.** I heard nothing new except some particulars, students have complained to me about many of the same things. Having permanent office space and staff would be a great step forward in alleviating many their complaints. Formal “train the advisor” sessions could remove many of the advising problems. Conducting forums for the students to come discuss issues and forums that present opportunities for scholarships etc, would also help a lot. If you can focus their energy into some sort of environmental club, that too has proven to be an effective way to engage and communicate with them. The students I met were serious and concerned – they were good students with a clear interest in their career development. I would use some of this group as a “student advisory” committee.
Texas A&M University
College of Geosciences

Environmental Programs

Business Plan
Fiscal Years 2008/09 to 2012/13

Prepared by Dr. Andrew Millington
Interim Director, Environmental Programs in Geosciences
March 18, 2008
1 Introduction

1.1 During 2007 the College of Geosciences has carried out a number of tasks which have stabilized the BS Environmental Geosciences (ENGS) and BS Environmental Studies (ENST) degrees. These are, the:

- establishing an Environmental Programs Executive Committee which has held regular meetings and reports its minutes publicly on a web site;
- elevating the profile of the degrees with the College and University through:
  - developing and launching of a new web site;
  - holding open meetings with Faculty and with Students; and
  - regular e-mail traffic between faculty and students.
- resolving major student advising issues associated with BS Environmental Geosciences program.
- developing a method to revise the degree programs, including the launching of new courses.

1.2 It is now time for the College to take a forward look and grow its Environmental Programs. In this regard, the visit (and subsequent report) of Dr. Bruce Coull‡ to advise the College on the Programs is germane to planning future growth.

1.3 There is significant potential for growth in the College's Environmental Programs. The reasons for this are

- increasing concern and awareness of environmental issues among high school and college students in Texas;
- high numbers (>600,000) of Texan students taking an environmental course at some time in their high school careers;
- scheduled short-term growth, and potential medium-term growth, in undergraduate enrollment at the main campus of Texas A&M University; and
- the likelihood of sustained growth in environmental jobs in the governmental, non-profit, commercial and educational sectors over the next decade.

2 Strategic objectives

Growth of the College's Environmental Programs can be cast around the following objectives:

- growth in the number of majors enrolled in both degrees programs from c. 85 to 200 by fiscal year† 2012/13;
- development of the curricula for both degrees so that they remain relevant to contemporary and future environmental issues, enhance career opportunities for majors, and remain competitive vis-à-vis other environmental programs at Texas A&M University and in competitor colleges;

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* These two degree programs are referred to as the Environmental Programs and the Programs in this document.
† Available at http://enst.tamu.edu/pdfs/report.pdf
‡ Fiscal years (FY) are used in this plan, they correspond to academic years.
· high quality advising of students in the Environmental Programs; and
· increased and sustainable levels of engagement of College faculty with the Environmental Programs.

3 Tactics

3.1 Growth in majors enrolled in both degrees programs from c. 85 to 200 by academic year 2012/13

3.1.1 Majors enrolled in the BS Environmental Studies degree grew steadily from 13 in fall 2002 to 37 in fall 2004. Since then they have been constant in the upper 30s. Majors enrolled in the BS Environmental Geosciences degree grew steadily from 4 in fall 2002 to 48 in fall 2005 and at the present time maybe about to reach a plateau, like the BS Environmental Studies degree, at around 55 enrollments (Fig. 1). The predicted growth in majors for both degrees is based on (i) semester-by-semester growth rates during the periods of growth in the early years of the degrees, and (ii) the initial increase in enrollment due to the recruitment campaign outlined below coming on line FY 2009/10.

Figure 1: Enrolled majors in the Environmental Programs, Fall 2002 to Fall 2007

3.1.2 To achieve the anticipated growth in enrollment a phased recruitment campaign is presented (Appendix 1) based on adding new recruitment strategies and new target audiences each fiscal year.

3.2 Continued development of the curricula for both degrees

3.2.1 Continued development of the two degree programs is essential if they are to remain attractive and relevant to students (therefore enabling student enrollment to grow) and meet Southern Association of Universities and Colleges reconfirmation criteria.
3.2.2 Making the programs attractive and relevant will require information gathered from potential employers (within state and nationwide), faculty and students. Information gathering will be achieved through building employer contacts, meetings of the Council of Environmental Deans and Directors, and regular open meetings of faculty and students involved in the Programs.

3.2.3 Information gathered will be analyzed by the Director, Executive Committee and Environmental Faculty, and degree plans amended accordingly.

3.2.4 The Southern Association of Universities and Colleges reconfirmation criteria (i.e. program purpose, learning objectives, program objectives for each degree program) will be established in Spring 2008. Information gathering and data manipulation for monitoring program performance against criteria will be the carried out by the Program's Advisor/Administrator and by the Director.

3.3 *High quality undergraduate advising*

3.3.1 The differences in advising between the BS Environmental Geosciences and BS Environmental Studies degrees that were identified during 2007 highlight the desirability of high quality advising if the degree programs are to be attractive to students, and produce motivated, employable graduates.

3.3.2 To achieve high quality advising at the present time the programs require an academic advisor in addition to the faculty who currently advise students. If future growth is to be achieved and sustained, (i) the role of the academic advisor becomes even more critical, and (ii) more faculty will be required to commit time to advise students. The current altruistic model of faculty engagement with the Environmental Programs will have to be changed to cope with expanded faculty engagement.

3.4 *Increased, sustainable engagement of College faculty with the Environmental Programs*

3.4.1 If the degree programs are to survive, let alone grow as projected, a new model of engagement between College faculty and the Programs needs to be negotiated. The Coulil Report outlined four models of faculty engagement. The Environmental Programs Executive Committee supports Model 2.

3.5 The tactics outlined above require immediate decisions, and human, space and financial resource investments in the Environmental Programs. These decisions and investments are outlined in Sections 4 and 5.
Appendix C-132

4 Decisions

Immediate decisions are required on:

- Human resources: specifically the Director of Environmental Programs, Academic Advisor/Administrator, and a Student Worker;
- Space resources: specifically rooms for Environmental Programs staff, student record storage, and a room to act as a base for student activities, student-faculty meetings etc; and
- Financial investments: specifically space refurbishment, maintenance costs to be incurred in running the programs, and staff and faculty costs.

The investment plans associated with these three resources are outlined below for a period of five fiscal years.

5 Investments

5.1 Human resources

5.1.1 A permanent Director of Environmental Programs is required from FY 2009/10 onwards. The Environmental Programs Executive Committee requires time to devise and negotiate a recruitment strategy for this position (http://enst.tamu.edu/minutes/2_08.pdf), and the proposed start date is Aug 1st 2009. Different budget estimates, based on this starting date, have been calculated for the permanent Director based on rank of appointment and cost sharing arrangements between the Environmental Programs and the Director's 'tenure home'.

5.1.2 The Environmental Programs Executive Committee has recommended that an Academic Advisor/Administrator be appointed from Aug 1st 2008. An advertisement is in the process of being developed for this position (http://enst.tamu.edu/minutes/2_08.pdf).

5.1.3 The Environmental Programs Executive Committee has recommended a student worker to be appointed from Sept 1st 2008 (http://enst.tamu.edu/minutes/2_08.pdf)

5.2 Space Resources

5.2.1. The Environmental Programs Executive Committee has requested O&M 104, 105, 106 and 109 be released to the Environmental Programs in time to allow them to be refurbished by the start of FY 2008/09 (Aug 1st 2008) (http://enst.tamu.edu/minutes/2_08.pdf). These rooms will be allocated as follows: 104 – Office for Academic Advisor/Administrator and Student Worker, 105 – Office for Director for the time being (assumption: Director will have their main office in the department they are tenured in), 106 – Student record filing, 109 – Environmental Programs base room.
5.3 Financial Resources

5.3.1 A budget is provided in Table 1 which integrates all costs associated with the above resource requests.

5.3.2 Human resources costs are estimated from July 16th 2008 (when the current appointment of the Interim Director finishes) to the end of fiscal year 2012/13 (Appendix 2). There are four scenarios. In each of these the Advisor/Administrator starts on Aug 1st 2008 and their starting salary is based on similar positions currently advertised at Texas A&M. The student worker is scheduled to start on Sep 1st 2008 and work 30 weeks for 10 hrs/week each year. Their costs are based on Texas minimum wage plus a premium that will allow either an undergraduate or graduate student to be employed. The scenarios differ in how the Director’s position is funded. Scenario 1 is based on 12 months funding for the Director at the full professor rank (based on 2007/08 average professorial salary in the College) plus a $700/month responsibility allowance. All costs to be paid from the Environmental Programs’ budget. The starting date for the Director is Aug 1st 2009. Scenario 2 is based on 3 months funding for the Director at the full professor rank (based on 2007/08 average professorial salary in the College). This and a $700/month responsibility allowance for the entire year to be paid from the Environmental Programs’ budget. The remaining 9 months to be paid for by the department of the Director’s tenure. The starting date for the Director is Aug 1st 2009. Scenario 3 is based on 12 months funding for the Director at the associate professor rank (based on 2007/08 average associate professorial salary in the College) plus a $700/month responsibility allowance: all to be paid from the Environmental Programs’ budget. The starting date for the Director is Aug 1st 2009. Scenario 4 is based on 3 months funding for the Director at the associate professor rank (based on 2007/08 average associate professorial salary in the College). This and a $700/month responsibility allowance for the entire year is paid from the Environmental Programs’ budget. The remaining 9 months is paid by the department of the Director’s tenure. The starting date for the Director is Aug 1st 2009. All positions have been budgeted with a 3% annual increase in salaries or hourly rates; the responsibility allowance of $700 has been set constant over the five years of the plan.

5.3.3 The capital costs for refurbishment of the rooms and the associated capital costs are based on estimates made by Maureen Reap (March 2008) and are provided in Appendix 3. Most costs will be incurred in fiscal year 2007/08; replacement computer costs on a three-year cycle have been included.

5.3.4 The running costs for the degree are based on estimates made in March 2008 for the five fiscal years of the business plan (Appendix 4). Inflation has been included at 3% p.a.

5.4 The estimated costs to run the Environmental Programs until fiscal year 2012/13 are given Table 1 and Figure 2.
# Table 1: Estimated costs for College of Geosciences Environmental Programs

**FY2007/08 to FY 2102/13**

<table>
<thead>
<tr>
<th>Year</th>
<th>2007-08</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HR costs</strong></td>
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<td>182981</td>
<td>188219</td>
<td>193613</td>
<td>199170</td>
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<td>0</td>
<td>0</td>
<td>9000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Running costs</strong></td>
<td>0</td>
<td>37015</td>
<td>35760</td>
<td>36800</td>
<td>37871</td>
<td>38974</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
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<td>214912</td>
<td>218742</td>
<td>234019</td>
<td>231485</td>
<td>238144</td>
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</table>

*HR scenario 1*

<table>
<thead>
<tr>
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<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
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<td>80148</td>
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<td>84518</td>
<td>86801</td>
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<td>0</td>
<td>9000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Running costs</strong></td>
<td>0</td>
<td>37015</td>
<td>35760</td>
<td>36800</td>
<td>37871</td>
<td>38974</td>
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<tr>
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*HR scenario 2*

<table>
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<th>2011-12</th>
<th>2012-13</th>
</tr>
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<tbody>
<tr>
<td><strong>HR costs</strong></td>
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<td>112359</td>
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</tr>
<tr>
<td><strong>Capital costs</strong></td>
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<td>0</td>
<td>0</td>
<td>9000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Running costs</strong></td>
<td>0</td>
<td>37015</td>
<td>35760</td>
<td>36800</td>
<td>37871</td>
<td>38974</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>46418</td>
<td>175585</td>
<td>142152</td>
<td>155131</td>
<td>150230</td>
<td>154452</td>
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*HR scenario 3*

<table>
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<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HR costs</strong></td>
<td>17528.1</td>
<td>38732</td>
<td>33081</td>
<td>33622</td>
<td>34584</td>
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<td><strong>Capital costs</strong></td>
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<td>0</td>
<td>9000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Running costs</strong></td>
<td>0</td>
<td>37015</td>
<td>35760</td>
<td>36800</td>
<td>37871</td>
<td>38974</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
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<td>75747</td>
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</table>

*HR scenario 4*

Appendix C-134
6 Benefits

6.1 It is difficult to estimate the income to the College due to the projected increased recruitment of majors to the two environmental degrees. There direct quantitative benefits are additional majors and additional student credit hours that will accrue to the College above fiscal year 2007/08 base numbers. These are given in Table 2 and Figure 3. However, a caveat needs to be incorporated regarding these figures which is that, if the likely economic downturn is severe, the increase in job opportunities in many sectors will slow and this may affect recruitment to the environmental programs and make them less attractive compared to other majors.

6.2 Intangible benefits will also accrue from the projected growth in Environmental Programs. As far as can be foreseen these will be:

- Spin-off recruitment of majors to other undergraduate programs in the College through cross-advertising in promotional and recruitment materials;
- An elevated profile of the College generally through active promotion of the Environmental Programs;
- Capture of the environmental agenda at Texas A&M University; and
- Elevation of Texas A&M within the academic environmental community statewide and nationwide.
### TABLE 2:
Cumulative increases in majors and SCHs above semester 2007C base values, to semester 13A.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Cumulative total of majors above base value, 2007C</th>
<th></th>
<th>Cumulative SCH above base value, 2007C^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>07C*</td>
<td>49</td>
<td>37</td>
<td>54</td>
</tr>
<tr>
<td>08A#</td>
<td>-1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>08C#</td>
<td>-1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>09A</td>
<td>3</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>09C</td>
<td>8</td>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td>10A</td>
<td>13</td>
<td>27</td>
<td>40</td>
</tr>
<tr>
<td>10C</td>
<td>18</td>
<td>36</td>
<td>54</td>
</tr>
<tr>
<td>11A</td>
<td>23</td>
<td>45</td>
<td>67</td>
</tr>
<tr>
<td>11C</td>
<td>27</td>
<td>53</td>
<td>81</td>
</tr>
<tr>
<td>12A</td>
<td>32</td>
<td>62</td>
<td>94</td>
</tr>
<tr>
<td>12C</td>
<td>37</td>
<td>70</td>
<td>107</td>
</tr>
<tr>
<td>13A</td>
<td>42</td>
<td>79</td>
<td>121</td>
</tr>
</tbody>
</table>

* Values are majors enrolled in BS Environmental Geosciences (ENGS) and BS Environmental Studies (ENST) degrees

# Values for semester 08A and 08C are not used in calculations, recruitment is assumed to increase from 09A onwards

^ Assumptions (1) an ENGS or ENST degree plan has 70 SCH taken in College of Geosciences has a minimum of Geosciences, (2) that the 70 SCH are spread evenly over 8 semesters, (3) that majors are enrolled evenly over 4 years.

---

Figure 3 Growth in majors in Environmental Programs above fall 2007 base value
Currently there is a timely opportunity to build on the momentum in the Environmental Programs within the College and student interest in environmental issues. There is potential for growth in the number of majors in the Environmental Programs which will bring tangible and intangible benefits to the College. However, the potential growth and benefits cannot be realized without the College making immediate decisions and investments. These are detailed in the preceding sections of this five-year plan. In summary they are:

- Making decisions about extending the Interim Director's position for one year, and appointing a permanent Director;
- Appointing a full-time Academic Advisor/Administrator from Aug 1st 2008;
- Appointing a part-time student worker from Sep 1st 2008;
- Releasing rooms 104, 105, 106 and 109 in the O&M Building, and refurbishing them in time for the start of the 2008/09 fiscal year;
- Agreeing on a budget to cover human resource, capital and running costs; and
- Deciding on a model of faculty engagement with the Environmental Programs.
Appendix 1

Draft recruitment strategy for College of Geosciences Environmental Programs

<table>
<thead>
<tr>
<th>Semester</th>
<th>Action</th>
</tr>
</thead>
</table>
| Spring 2008   | 1. Attend Aggieland Saturday  
                | 2. Posters in all buildings on Texas A&M College Station campus, advertise in The Battalion  
                | 3. Upgrading of Program’s web site  
                | 4. Attend some Texas A&M recruitment days in major Texas cities |
| Fall 2008     | Actions 2 & 3, plus  
                | 5. Preparation of recruitment materials |
| Spring 2009   | Actions 1-5  
                | (4) Attend Texas A&M recruitment days in some Texas cities not visited in Spring 2008 |
| Fall 2009     | Actions 2 & 3, plus  
                | (5) Revision of recruitment materials  
                | 6. Send letters to careers officers in Texas high schools |
| Spring 2010   | Actions 1-5  
                | (4) Attend Texas A&M recruitment days in some Texas cities not visited in Spring 2008 and 2009 |
| Fall 2010     | Actions 2, 3 and 6, plus  
                | (5) Revision of recruitment materials  
                | 7. Send recruitment materials to colleges in Texas, Oklahoma, Louisiana and New Mexico schools |
| Spring 2011   | Actions 1-5  
                | (4) Attend Texas A&M recruitment days in some Texas cities not visited in Spring 2008-2010 |
| Fall 2011     | Actions 2, 3, 6 and 7  
                | (5) Revision of recruitment materials |
| Spring 2012   | Actions 1-5  
                | (4) Attend Texas A&M recruitment days in some Texas cities not visited in Spring 2008-2011 (or repeat visits) |
Appendix 2

Human resource costs

### Human resources scenario 1

<table>
<thead>
<tr>
<th></th>
<th>2007-08</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11-12</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>17528</td>
<td>141850</td>
<td>145853</td>
<td>149977</td>
<td>154224</td>
<td>158599</td>
</tr>
<tr>
<td>Advisor/Admin</td>
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<td>33047</td>
<td>34038</td>
<td>35059</td>
<td>36111</td>
<td>37194</td>
</tr>
<tr>
<td>Student worker</td>
<td>0</td>
<td>1965</td>
<td>2175</td>
<td>2265</td>
<td>2355</td>
<td>2447</td>
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<tr>
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<td><strong>187301</strong></td>
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<td><strong>198240</strong></td>
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</tbody>
</table>

*Director (full professor, 12 months, starts Aug 2009); Advisor/Administrator (12 months, starts Aug 2008) & Student Worker (30 weeks, starts Sep 2008)*

*Interim Director costs based on Millington’s costs in Jan 2007-Jul 2008 extended Jul 15 2008-Jul 31 2009*

### Human resources scenario 2

<table>
<thead>
<tr>
<th></th>
<th>2007-08</th>
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<th>2009-10</th>
<th>2010-11-12</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
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<td>33047</td>
<td>34038</td>
<td>35059</td>
<td>36111</td>
<td>37194</td>
</tr>
<tr>
<td>Student worker</td>
<td>0</td>
<td>1965</td>
<td>2175</td>
<td>2265</td>
<td>2355</td>
<td>2447</td>
</tr>
<tr>
<td><strong>Salary totals</strong></td>
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<td><strong>85871</strong></td>
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</table>

*Director (full time professor, 9 months salary tenured from dept, 3 months salary and admin allowance from environmental programs, starts Aug 2009); Advisor/Administrator (12 months, starts Aug 2008) & Student Worker (30 weeks, starts Sep 2008)*

*Interim Director costs based on Millington’s costs in Jan 2007-Jul 2008 extended Jul 15 2008-Jul 31 2009*

### Human resources scenario 3

<table>
<thead>
<tr>
<th></th>
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<th>2010-11-12</th>
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<tbody>
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<td>Director</td>
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<td>34038</td>
<td>35059</td>
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<td>37194</td>
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<td>2175</td>
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*Director (assoc professor, 12 months, starts Aug 2009); Advisor/Administrator (12 months, start Aug 2008) & Student Worker (30 weeks) start Aug Sep 2008*

*Interim Director costs based on Millington’s costs in Jan 2007-Jul 2008 extended Jul 15 2008-Jul 31 2009*

### Human resources scenario 4

<table>
<thead>
<tr>
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<td>37194</td>
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<td>Student worker</td>
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<td>1965</td>
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*Director (assoc professor, 9 months salary tenured from dept, 3 months salary and admin allowance from environmental programs, starts Aug 2009); Advisor/Administrator (12 months, starts Aug 2008) & Student Worker (30 weeks, starts Sep 2009)*

*Interim Director costs based on Millington’s costs in Jan 2007-Jul 2008 extended Jul 15 2008-Jul 31 2009*
# Appendix 3

## Space refurbishment costs

<table>
<thead>
<tr>
<th>Room</th>
<th>Activity</th>
<th>Estimate</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>all 4 rooms</td>
<td>painting</td>
<td>1530</td>
<td>TAMU paint crew</td>
</tr>
<tr>
<td></td>
<td>sound insulation</td>
<td>500</td>
<td>PPPlant install</td>
</tr>
<tr>
<td></td>
<td>ceiling tiles replaced</td>
<td>100</td>
<td>labor cost; use extra tiles in basement</td>
</tr>
<tr>
<td>Rm 104</td>
<td>computer (adviser)</td>
<td>2750</td>
<td>includes network relocation and software</td>
</tr>
<tr>
<td></td>
<td>computer (student)</td>
<td>2750</td>
<td>includes network relocation and software</td>
</tr>
<tr>
<td></td>
<td>desk chair (adviser)</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>desk chair (student)</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bull bds, small (2)</td>
<td>120</td>
<td>installation included</td>
</tr>
<tr>
<td></td>
<td>desks (2)</td>
<td>1000</td>
<td>Surplus Property, building extras or purchase</td>
</tr>
<tr>
<td></td>
<td>guest chairs (2)</td>
<td>300</td>
<td>building extras available, budget $150 each</td>
</tr>
<tr>
<td></td>
<td>bookcases</td>
<td>600</td>
<td>Surplus Property; if purchased, allow $600</td>
</tr>
<tr>
<td></td>
<td>filing cabinet(s)</td>
<td>500</td>
<td>building extras available, lock changes budgeted</td>
</tr>
<tr>
<td></td>
<td>French door</td>
<td>2000</td>
<td>single light, fire-rated; as in CLGE offices</td>
</tr>
<tr>
<td></td>
<td>door hardware</td>
<td>350</td>
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<tr>
<td></td>
<td>lettering on door</td>
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<td>includes network relocation and software</td>
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<td>desk</td>
<td>500</td>
<td>Surplus Property, building extras or purchase</td>
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<tr>
<td></td>
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<td>60</td>
<td>installation included</td>
</tr>
<tr>
<td></td>
<td>guest chairs (2)</td>
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<td>building extras available, budget $150 each</td>
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<tr>
<td></td>
<td>bookcase</td>
<td>300</td>
<td>Surplus Property; if purchased, allow $300</td>
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<tr>
<td>Rm 106</td>
<td>filing cabinets</td>
<td>1000</td>
<td>building extras available, lock changes budgeted</td>
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<td>2500</td>
<td>Installed</td>
</tr>
<tr>
<td></td>
<td>projection computer</td>
<td>2750</td>
<td>includes network relocation and software</td>
</tr>
<tr>
<td></td>
<td>PPPlant electricals</td>
<td>100</td>
<td>to install above-ceiling receptacle</td>
</tr>
<tr>
<td></td>
<td>screen</td>
<td>150</td>
<td>we hang it ourselves</td>
</tr>
<tr>
<td></td>
<td>bull bds, large (3)</td>
<td>510</td>
<td>Installed</td>
</tr>
<tr>
<td></td>
<td>whiteboard</td>
<td>200</td>
<td>installed; unless we recycle the one stored there now</td>
</tr>
<tr>
<td></td>
<td>conference table(s)</td>
<td>3000</td>
<td>building extras available, else Surplus Property</td>
</tr>
<tr>
<td></td>
<td>conference seating</td>
<td></td>
<td>15 chairs at $200 each</td>
</tr>
<tr>
<td></td>
<td>French door</td>
<td>2000</td>
<td>single light, fire-rated; as in CLGE offices</td>
</tr>
<tr>
<td></td>
<td>door hardware</td>
<td>350</td>
<td>ADA-compliant required</td>
</tr>
<tr>
<td></td>
<td>lettering on door</td>
<td>200</td>
<td>building extras available; large wooden on wheels</td>
</tr>
<tr>
<td></td>
<td>podium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DVD player and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>speakers</td>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>

**Total**: 28890

---

Appendix C-140
Environmental Programs running costs

<table>
<thead>
<tr>
<th></th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 CEDD</td>
<td>4000</td>
<td>4120</td>
<td>4244</td>
<td>4371</td>
<td>4502</td>
</tr>
<tr>
<td>2 ES Conf</td>
<td>4000</td>
<td>4120</td>
<td>4244</td>
<td>4371</td>
<td>4502</td>
</tr>
<tr>
<td>3 ES Conf</td>
<td>5000</td>
<td>5150</td>
<td>5305</td>
<td>5464</td>
<td>5628</td>
</tr>
<tr>
<td>4 Copier</td>
<td>3900</td>
<td>4017</td>
<td>4138</td>
<td>4262</td>
<td>4389</td>
</tr>
<tr>
<td>5 Office</td>
<td>4000</td>
<td>2000</td>
<td>2060</td>
<td>2122</td>
<td>2185</td>
</tr>
<tr>
<td>6 Seminars</td>
<td>8250</td>
<td>8498</td>
<td>8752</td>
<td>9015</td>
<td>9285</td>
</tr>
<tr>
<td>7 Meetings</td>
<td>1500</td>
<td>1545</td>
<td>1591</td>
<td>1639</td>
<td>1688</td>
</tr>
<tr>
<td>8 Promotion</td>
<td>2000</td>
<td>2060</td>
<td>2122</td>
<td>2185</td>
<td>2251</td>
</tr>
<tr>
<td>9 Other</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>10 Contingency</td>
<td>3365</td>
<td>3251</td>
<td>3345</td>
<td>3443</td>
<td>3543</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>37015</td>
<td>35760</td>
<td>36800</td>
<td>37871</td>
<td>38974</td>
</tr>
</tbody>
</table>

**Notes**

1. CEDD meetings held in Jan (Washington DC) and in summer (elsewhere)
   Director budgeted to attend both
2. Environmental Sciences Conference, held May every year
   Director and 1 envt faculty member budget to attend
3. Competitive funding for undergrad students to present environmental research
4. Monthly rental, photocopier
5. Office stationery supplies. Double budget in first year to clear backlog on supplies
6. Honoraria and travel costs outside seminar speakers, budgeted on 15/yr
7. Catering costs for 2 students meetings/year, 2 social events/year
   and coffee for faculty and advising meetings
8. Materials for promotion

First $40K/yr
2nd + $30K/yr x with review ind. student works
College of Geosciences

Environmental Programs

Environmental Faculty By-Laws
October 2008
Article I. PURPOSE AND INTENT

The Environmental Faculty (herein after Faculty) of the College of Geosciences (herein after College) administer and promote the Environmental Programs (herein after Programs) in the College at Texas A&M University (herein after University). The primary roles of the Faculty are to coordinate the Programs and to prepare candidates for the B.S. degrees in Environmental Geosciences and Environmental Studies.

Environmental Geosciences and Environmental Studies are interdisciplinary programs encompassing all disciplines in the College. The organization of the Faculty reflects this and includes faculty whose teaching and research interests include environmental geosciences and environmental studies.

The Programs operate under the Administrative Framework for Interdisciplinary Programs at Texas A&M University (University Rule 15.01.99.M07)

Article II. MEMBERSHIP

In addition to their departmental affiliation and responsibilities, Faculty direct undergraduate education and research of candidates for the B.S. in Environmental Geosciences and/or the B.S. in Environmental Studies.

Article II A. Status and Eligibility
Membership categories are Full, Associate, and Special. Regardless of category, membership is a responsibility to be earned and maintained. The criterion for continued membership is evidence of ongoing interest and scholarly involvement in at least one of the activities outlined for each membership category.

All members are required to reaffirm membership every fourth year. If a member’s contract is less than four years, they are required to reaffirm membership when a new contract comes into force. The Director of Environmental Programs (herein after Director) notifies members six months before they need to reaffirm membership. The Advisory Committee reviews reaffirmation materials. Any member failing the reaffirmation process has the right of appeal to the Advisory Committee.

**Article II B. Membership Categories**

(i) **Full members.**

Members of the College who (i) have tenure; (ii) hold a tenure-track position; or (iii) are research-track professors in a College Department, Center or Institute are eligible to become Full Members of the Faculty under the criteria and guidelines outlined in the by-laws. Postdoctoral scientists and postgraduate research students cannot be Full Members.

To be eligible to be a Full Member, College faculty must substantively contribute to the development and operation of the Programs, for example, by: (i) teaching a key course in the Environmental Geosciences and/or Environmental Studies degree programs; (ii) mentoring and advising degree candidates; (iii) supervising undergraduate research; (iv) authoring relevant textbooks; (v) conducting pedagogic research in environmental geosciences or studies; or (vi) undertaking environmental outreach activities. A key course is defined as a
GEOS-coded course, or a course offered by a College department that regularly has a high enrollment of students seeking the B.S. in Environmental Geosciences or the B.S. in Environmental Studies.

A Full Member has voting privileges.

Full Members receive a letter of appointment from the Dean of Geosciences outlining the division of their teaching and service between their department and the Programs in a proportion agreed by the Dean, the Department, Center, or Institute Head, the Director, and the Full Member.

The Director annually evaluates each Full Member’s teaching and service to the Programs and provides this to the Full Member’s Department, Center, or Institute Head. When a Full Member is undergoing mid-term review or consideration for tenure or promotion, the Programs Standing Committee for Tenure and Promotion provides a report on the teaching and service of a Full Member to the Member’s department as input to the department’s tenure and promotion committee. If the Dean’s letter of appointment identifies specific expectations regarding participation in the Programs, this report should be given weight in proportion to the assigned level of participation in the Programs.

Individuals affiliated with the College who wish to become a Full Member must submit an application to the Director.

(ii) **Associate members.**

Members of the College who (i) have tenure; (ii) hold a tenure-track position; (iii) are research-track professors in a College Department, Center or Institute; or (iv) are lecturers in
a College department are eligible to become Associate Members of the Faculty under the criteria and guidelines outlined in the by-laws. Postdoctoral scientists and postgraduate research students cannot be Associate Members.

To be eligible to be an Associate Member, College faculty must support the Programs, for example, by: (i) teaching a non-key course in the Environmental Geosciences and/or Environmental Studies degree programs; (ii) supervising undergraduate research; (iii) authoring relevant textbooks; (iv) conducting pedagogic research in environmental geosciences or studies; or (v) undertaking environmental outreach activities.

An Associate Member has voting privileges.

The Director annually evaluates each Associate Member's teaching and service to the Programs and provides this to the Associate Member's Department, Center, or Institute Head.

Individuals affiliated with the College who wish to become an Associate Member must submit an application to the Director.

(iii) Special Members.

Members of the College who (i) are instructors; (ii) hold temporary teaching or research appointments; (iii) are postdoctoral scientists; or (iv) have adjunct appointments are eligible to become Special Members of the Faculty under the criteria and guidelines outlined in the by-laws.
To be eligible to be a Special Member, College faculty may teach a course in the degree programs; contribute to the development of the Programs; supervise undergraduate research; author relevant textbooks; undertake pedagogic research in environmental geosciences or studies; or conduct outreach activities.

A Special Member does not have voting privileges.

The Director evaluates each Special Member’s teaching and service to the Programs for use in the Special Member’s annual evaluation.

Individuals affiliated with the College who wish to become a Special Member must submit an application to the Director.

(iv) Disputes and Mediation

The Dean of Geosciences mediates any disputes regarding membership.

Article III. FUNCTIONS OF THE ENVIRONMENTAL FACULTY

A. The principal functions of the Faculty are to:

i. Administer the B.S. in Environmental Geosciences and B.S. in Environmental Studies degrees to ensure uniformity and high academic standards.
ii. Develop and update program descriptions, including recommendations for changes and new courses.

iii. Evaluate GEOS-coded courses prior to consideration by the College Undergraduate Curriculum Committee.

iv. Provide leadership in short and long-term planning.

v. Serve on College and University committees.

vi. Assist in the recruitment of students.

vii. Develop internship, outreach, and public education activities.

B. The Faculty is the main decision-making body of the Programs. Decisions are to be made at Faculty meetings or by e-mail ballots.

Article IV. ADVISORY COMMITTEE

The Advisory Committee consists of one Full Member from each College department, two student members (one from each degree program), and the Director.

Advisory Committee members are elected by the Full and Associate Members of the Faculty in each department. Student representatives are elected from the students enrolled in each degree program.
The Associate Dean for Academic Affairs (or nominee) attends the Advisory Committee in an *ex-officio* capacity.

The Director is Chair of the Advisory Committee.

Advisory Committee members serve four-year terms. Elections for Advisory Committee members are staggered at the discretion of the Director so that terms of office overlap. Student representatives serve one year. All Committee members may serve a maximum of two consecutive terms.

The Advisory Committee fills any vacancies that occur during a member’s term of office by an immediate election by Faculty members in that department or students in the degree program in which the vacancy arises for the remaining time of the vacating member’s period of office.

**Article V. FUNCTIONS OF THE ADVISORY COMMITTEE**

A. The Advisory Committee advises the Director and Faculty on:

   i. Short- and long-term planning.

   ii. Student recruitment.

   iii. Internship, outreach and public education activities.

   iv. Other matters as requested by the Director or the Faculty.
B. Advisory Committee members must communicate about Environmental Programs with all faculty in their departments and to students in the Environmental Geosciences and Environmental Studies degree programs.

Article VI. ELECTION TO THE ADVISORY COMMITTEE

A. The Director notifies all members of the Faculty in a department when an Advisory Committee vacancy arises, or notifies all students in the Environmental Geosciences or Environmental Studies degree programs when a vacancy arises.

B. The Faculty members, by department, elect a Full Member representative, as vacancies arise, to the Advisory Committee and report the election results to all members of that department through the Department Head, and to Faculty and students in the Environmental Geosciences and Environmental Studies degree programs through the Director.

C. The Director organizes the elections of a representative to the Advisory Committee from students enrolled in the Environmental Geosciences degree program and a representative from students enrolled in the Environmental Studies degree program and reports the election results to all Environmental Programs students and the Faculty.

Article VII. DIRECTOR OF ENVIRONMENTAL PROGRAMS

A. The Director is the chief officer of the Faculty.
B. The Dean of Geosciences appoints the Director in consultation with the Faculty.

C. The Director chairs Faculty and Advisory Committee meetings.

D. The Director represents the Faculty and appoints members to Standing Committees as necessary with the approval of the Faculty.

F. The Director liaises with the Dean of Geosciences, other administrative officers, and the Faculty Senate; is a member of the College Undergraduate Curriculum Committee, and works closely with College Department, Center and Institute Heads.

G. The Director may appoint an Assistant Director from the Faculty to serve for a term of one year with the possibility of reappointment annually.

H. In the absence of the Director, the Assistant Director chairs Faculty and Advisory Committee meetings and has signature authority.

Article VII. MEETINGS

A. A minimum of two Faculty meetings are held each year, one in the fall semester and one in the spring semester. Meeting dates are announced at least two weeks before meetings. Agenda items are submitted in writing to the Director at least one week prior to the meeting.

B. Special meetings of the Faculty may be called by the Director or by written application to the Director by at least five members of the Faculty.
C. The Advisory Committee meets regularly during semesters at a frequency, and for such purposes, as are deemed desirable by the Director or Faculty.

D. All Faculty and Advisory Committee meeting agenda must be posted on the Programs’ web site at least five working days before any meeting.

E. The unapproved minutes of all Faculty, Advisory, and Standing Committee meetings are to be posted on the Programs’ web site in a timely fashion. Minutes are approved at the next meeting and posted. Corrections, if needed, appear in the minutes of the following relevant meeting.

F. Faculty, Advisory, and Standing Committee meetings must follow Robert’s Rules of Order.

**Article VIII. STANDING COMMITTEES**

A. Standing committees, when required, are approved by the Director, Advisory Committee, and the Faculty. Appointments to them are made from the Faculty in an appropriate manner.

**Article IX. AMENDMENTS**

Suggestions for amendments to the By-Laws may be submitted in writing to the Advisory Committee through the Director at any time by any member of the Faculty. The Advisory Committee schedules Faculty discussion of proposed amendments that must be approved by at least two-thirds of the votes of Faculty with voting privileges.
## Program Coordinator

### Position Description

<table>
<thead>
<tr>
<th>Position Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position Title</strong></td>
</tr>
<tr>
<td><strong>Posting Title</strong></td>
</tr>
<tr>
<td><strong>Title Code</strong></td>
</tr>
<tr>
<td><strong>Classified / Non-Classified</strong></td>
</tr>
<tr>
<td><strong>If New Title, Please Enter Proposed Title:</strong></td>
</tr>
<tr>
<td><strong>Department</strong></td>
</tr>
<tr>
<td><strong>Geographic Location</strong></td>
</tr>
<tr>
<td><strong>Direct Supervisor</strong></td>
</tr>
<tr>
<td><strong>PIN</strong></td>
</tr>
<tr>
<td><strong>FLSA</strong></td>
</tr>
<tr>
<td><strong>ADLOC Account</strong></td>
</tr>
<tr>
<td><strong>Funding Account(s)</strong></td>
</tr>
<tr>
<td><strong>Primary Funding Source</strong></td>
</tr>
<tr>
<td><strong>Title Minimum Salary Rate</strong></td>
</tr>
<tr>
<td><strong>Title Minimum Salary Pay Basis</strong></td>
</tr>
<tr>
<td><strong>Position Type</strong></td>
</tr>
<tr>
<td><strong>If 'Part Time', Please Specify Percent Effort:</strong></td>
</tr>
<tr>
<td><strong>Is this position restricted by the Patriot Act?</strong></td>
</tr>
<tr>
<td><strong>Is this position D.O.T. regulated?</strong></td>
</tr>
<tr>
<td><strong>Secondary Costs:</strong></td>
</tr>
<tr>
<td><strong>Is this a supervisory position that has the authority to hire employees or whose recommendations for hiring, termination or other change of employment status are given strong consideration?</strong></td>
</tr>
<tr>
<td><strong>Employees Supervised:</strong></td>
</tr>
<tr>
<td><strong>Does this employee customarily and regularly exercise discretion and independent judgment and have the authority to make important decisions?</strong></td>
</tr>
</tbody>
</table>
If Yes, give percentage: 70

Please indicate machines or equipment used in the performance of essential duties:
- Computer – 20 hrs
- Telephone – 5 hrs
- Standard Office Equipment – 2 hrs

TITLE Required Education and Experience: Bachelor’s degree or any equivalent combination of training and experience. Three years of administrative experience.

Position Specific Required Education and Experience: Bachelor’s degree. Three years experience of any combination in program coordination, advising, teaching, coaching, Student Affairs, or administrative experience.

TITLE Preferred Education and Experience: Bachelor’s degree. Four or more years of administrative experience.

Position Specific Preferred Education and Experience: Master’s degree or above in a related area such as education, counseling, or general subject area of placement and two years experience in program coordination, advising, teaching, coaching, Student Affairs and/or administrative experience.

TITLE Required Licenses and Certifications: None.

Position Specific Required Licenses and Certifications: None

Preferred Licenses and Certifications: None

TITLE Required Special Knowledge, Skills, and Abilities: Excellent oral and written communication skills. Ability to use word processing, spreadsheet and database programs.

Position Specific Required Special Knowledge, Abilities, and Skills: Excellent verbal and written communication skills in English. Strong organizational and planning skills and demonstrated customer service ability/service orientation/work ethic. Ability to exercise judgment and make decisions independently. Professional telephone manner. Working knowledge of word processing and spreadsheet software. Ability to multi-task and work cooperatively with others.

Preferred Special Knowledge, Abilities, and Skills: Familiarity with TAMU academic policies and procedures; working knowledge of COMPASS and/or BANNER.

TITLE Other Requirements or Other Factors: None

Position Specific Other Requirements or Other Factors: None

Preferred Other Requirements or Other Factors: None

Job Duties

General Summary
This Program Coordinator position is responsible for managing the Environmental Program’s resources, partnership and program development, program recruitment, and program enhancements. This position provides academic support, mentorship, advising, and coordinates internships and scholarships for the program.

Job Duties
Is this an Essential Duty? Yes
Duty Title Program Management
Duties Performed: The position manages the program resources, both personnel and fiscal, assists with the development of partnerships and expanding the program and enhancing the program’s effectiveness.
This position manages, coordinates, and monitors the day-to-day financial and business operations of the program. Advises the Program Head and SABA on any appropriate actions necessary to address issues that arise. Assists with program administration, faculty, staff, and students with fiscal and administrative policy information. Provides oversight and guidance for compliance issues. Is responsible for coordinating the program resources. Works with the Director to maximize the utilization of program resources to meet program goals.

Prepares Faculty Workload Report for presentation to Program Head for review and approval; prepares and processes tuition payments and scholarship payments using COMPASS or 3rd party billing system.

<table>
<thead>
<tr>
<th>Percent of Total Time</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is this an Essential Duty?</td>
<td>Yes</td>
</tr>
<tr>
<td>Duty Title</td>
<td>Academic Duties</td>
</tr>
<tr>
<td>Duties Performed</td>
<td>Provides academic advice to undergraduate students concerning college/department programs and opportunities. Advises or refers students and prospective students in areas concerning college admission and readmission, professional concerns, housing, financial aid, student services, degree programs, academic schedules, course schedules, course planning and selections, major options, and career and educational goals. Serves to facilitate the application and admission of students, advises students with academic, probationary, and financial concerns and determines possible courses of action. Reviews degree plans and processes add/drop, Q drops, withdrawals and change of curriculum and may process course substitutions. Uses COMPASS for students, degree audit, tuition waivers, transfers, blocking and unblocking, test scores, maintenance of student data and course prerequisites. Coordinates mentor program that matches current students with alumni who can offer coursework and career advice. Attends, interacts with, and provides administrative assistance to department undergraduate and graduate committees by completing paperwork/reports associated with students and their coursework.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of Total Time</th>
<th>25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is this an Essential Duty?</td>
<td>Yes</td>
</tr>
<tr>
<td>Duty Title</td>
<td>Program Development</td>
</tr>
<tr>
<td>Duties Performed</td>
<td>Prepares agendas and takes minutes at Environmental Programs’ meetings. Helps with organizing Environmental Program events. Updates Environmental Programs website as needed, prepares and disseminates monthly newsletter to faculty and students in Environmental Programs. Organizes biweekly environmental cafe’s to encourage interaction of students and faculty. Coordinates teaching schedules with college and registrar; orders, prints and distributes student faculty evaluations, maintains class rosters, grade sheets, enrollment lists, course syllabi and facilitates completion of faculty and student reports; prepares textbook requisitions and information for University catalogues; supervises student records including databases of current, former and prospective students, degree awarded and scholarship programs. Keeps students and faculty informed with current University policies and procedures and serves as department liaison with College and University offices regarding all academic issues. Collaborates with other departmental academic staff in recruiting and retention of students in the College of Geosciences. Supervises undergraduate student organization – Environmental Programs Involvement Committee (EPIC).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of Total Time</th>
<th>15%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is this an Essential Duty?</td>
<td>Yes</td>
</tr>
<tr>
<td>Duty Title</td>
<td>Program Expansion and Recruiting</td>
</tr>
<tr>
<td>Duties Performed</td>
<td>Meets with prospective students and parents, meets with freshmen and transfer students for new student conferences and orientations. Responds to student and parent inquiries. Develops recruiting materials as well as website content management and content development. With help of faculty develops and revises informational material such as student hand-outs and pamphlets for prospective students. Works with faculty and director to advertise Environmental Programs through specified venues. Collaborates with college communications manager in the creation and distribution of recruiting materials targeting current and prospective students; and college web developer with development and revision of content for the program website. Interacts with high school counselors for prospective students and Blinn admissions for co-enrolled students.</td>
</tr>
<tr>
<td>Percent of Total Time</td>
<td>10%</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Is this an Essential Duty?</td>
<td>Yes</td>
</tr>
<tr>
<td>Duty Title</td>
<td>Strategic Planning</td>
</tr>
<tr>
<td>Duties Performed</td>
<td>Identifies and promotes advertised internship offerings. Engages with program alumni and regional employers to encourage creation of new internships. Links interested students with faculty offering undergraduate research or study abroad opportunities.</td>
</tr>
<tr>
<td>Percent of Total Time</td>
<td>5%</td>
</tr>
<tr>
<td>Is this an Essential Duty?</td>
<td>No</td>
</tr>
<tr>
<td>Duty Title</td>
<td>Other</td>
</tr>
<tr>
<td>Duties Performed</td>
<td>Performs other duties as assigned.</td>
</tr>
<tr>
<td>Percent of Total Time</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Supervisor**

**Supervisor Position Description**

- **Job Title**: Professor And Director
- **Position Number**: DEAN OF GEOSCIENCES / 02-137500
- **Org Unit**: DEAN OF GEOSCIENCES / 02-137500
- **First Name**: Christian
- **Last Name**: Brannstrom
- **Email**: CBRANNST@GEOG.TAMU.EDU
- **User Groups**: Employee [Texas A&M University], Employee-PD Action [DEAN OF GEOSCIENCES / 02-137500], Hiring Supervisor [DEAN OF GEOSCIENCES / 02-137500]

**Employee**

**Seated User**

- **Details**
  - **First Name**: Emily
  - **Last Name**: Dykes
  - **Work Email**: edykes@geos.tamu.edu
  - **Org Unit Ids**: Texas A&M University
  - **Reporting Org Unit**: DEAN OF GEOSCIENCES / 02-137500
  - **Position Type**: Staff
Emily Driskill Dykes
(979) 255-6597 • emilyaggie@aggienetwork.com

EDUCATION
Bachelor of Science Degree in Environmental Studies, Texas A&M University 8/2004-12/2007
Minors in Geography and Earth Science; Cum Laude

PROFESSIONAL EXPERIENCE
Program Coordinator, Environmental Programs in Geosciences, Texas A&M University 3/2013 – Present
Academic Advisor I, Environmental Programs in Geosciences, Texas A&M University 9/2008 – 3/2011

• Established office for a newly created Environmental Programs and advisor position from the ground up.
• Developed a filing system, ordered all start-up office supplies, and worked with students and faculty to implement a new procedure of advising vs. faculty mentoring.
• Established annual events to allow students to network with their classmates and faculty.
• Develop a monthly student e-newsletter.
• Provides academic advice in regards to degree completion, add/drops, Q drops, withdrawals, internships, study abroad, careers, research, and change of curriculum and refers students to other University resources when necessary.
• Works with Web Developer to design informational materials and update the website.
• Works closely with the Director of Recruitment to meet with prospective students and their parents.
• Presents information about the Environmental Programs to freshmen and transfer students during their New Student Conferences and assist in registration.
• Serves on a team of advisors in coordination with the Director of Recruitment for the Geosciences Freshman Group Advising, a retention program targeting new freshmen classified as high risk.
• Forecasts expenditures and monitors budget when purchasing promotional materials, office supplies, and travel expenses.

Presenter, University Advisors and Counselors (UAC) & National Association of Academic Advisors (NACADA)
• Etiquette 101: Teaching Students Etiquette They Will Use Now and After College 2/2012, 10/2012, & 3/2013

PROFESSIONAL AFFILIATIONS, COMMITTEES, AND VOLUNTEER WORK
National Academic Advising Association (NACADA)
Texas Academic Advising Network (TEXAAN)
• 2011 TEXAAN Committee - Program Chair
University Advisors and Counselors (UAC)
• 2010 and 2012 UAC Advising Symposium Committee - Program Chair
• 2011 UAC Advisor Briefing Day - Presentation Chair
Geosciences Career Fair Mixer Planning Committee Chair
Geosciences Parents’ Weekend Committee
2013 Aggieland Saturday College of Geosciences Committee Chair

SKILLS AND CERTIFICATIONS
Microsoft Word, Excel, Power Point, Publisher, and Works
Adobe Acrobat and PhotoShop
ARGOS
SIMS and COMPASS (Banner)

Basic GIS knowledge including ArcMap operations
QPR Certified Gatekeeper
CPR and AED Certified
ATMentor
Veteran Mentor

AWARDS
2014 Texas A&M University Fish Camp Namesake
2014 Texas A&M President’s Advising Award
2014 College of Geosciences Dean’s Distinguished Achievement Award-Staff
2011 College of Geosciences Runnels Advising Award
College of Geosciences, Texas A&M University
Position Description
Program Director

Employees Supervised
Program Coordinator, Other Program Employees

Required Education and Experience
Ph.D. in a relevant field, appointment with tenure as Associate Professor and 10 years professional experience

Preferred Education and Experience
Ph.D. in a relevant field, appointment with tenure as a full Professor, 15 years professional experience

Required special knowledge, abilities and skills
Management experience, Organizational Skills, People Management Skills

Preferred special knowledge, abilities and skills
Management and leadership experience in higher education, government or industry.

Other requirements or other factors
Ability to work cooperatively with others

General Summary
The PD is the leader of the program and is responsible for supervising and directing the teaching and service missions of the program in alignment with that of the college and university. The PD is responsible for development, budget, curricula, academic program assessment, degree offerings, staff/student recruitment, staff promotion, fundraising, long-range strategic planning, matters of academic quality, promotion of department interests, and outreach, with other duties as assigned.

Total Percentage of Duties: 100%

- Leadership (20%)
  - Sets a vision and leads long-range strategic planning through engagement of program stakeholders and in alignment with departmental, college and university vision and strategic plans.
  - Contributes to planning, development, priority setting at the College level
o Represents the program to university administration, internal and external academic communities, former students, industry, government, foundations and the public.
o Supports an inclusive climate of open communication, collegiality, equity, team work, and shared governance within the program.
o Defines program fundraising/development priorities and promotes them to potential donors.
o Establishes unit priorities and effectively manages unit resources.
o Promotes internationalization and globalization.

• **Faculty and Staff Hire, Evaluation and Professional Development (10%)**
o Conducts annual performance evaluation of staff. Establishes and supports professional goals and annual goals with staff.
o Actively supports the professional growth and development of staff.
o Recognizes staff through rewards/award structures.
o Oversees staff recruitment.
o Promotes diversity in the workforce.

• **Academic Administration (35%)**
o Leads assessment of learning outcomes for all academic programs.
o Oversees class scheduling and teaching assignments.
o Supports interdisciplinary educational programs in the College and University.
o Supports student advising with respect to courses, course sequencing, academic progress, career goals, etc.
o Supports recruitment of high quality students to program.
o Coordinates with Dean’s office in matters related to IT support, college laboratories, communications, undergraduate student recruitment, cross-college curriculum efforts, climate and diversity.
o Ensures that proper laboratory and field safety protocols are in place and enforced.
o Oversees unit’s space allocation to ensure that it effectively meets the needs of the unit.
o Oversees course catalog updates.
o Ensures compliance with program, college, university and State of Texas policies and procedure.
o Makes merit recommendations to the Dean.
o Engages faculty through regular program meetings in order to ensure effective communication, planning and consensus building.
o Conducts regular meetings of the Environmental Programs Advisory Committee.
• **Teaching/Research/Professional (35%)**
  o Teaches, conducts research, mentors students, and engages in professional activities in a way that serves as a model for faculty colleagues and supports department development
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Curriculum Vitae: Christian Brannstrom

CONTACT INFORMATION
Department of Geography, Texas A&M University, 202B CSA (“Teague”), 3147 TAMU, College Station TX 77843-3147 USA Tel. 979 845 5923 Fax 979 862 4487
E-mail: cbrannst@geos.tamu.edu

EDUCATION
Ph.D. 1998, University of Wisconsin-Madison, Department of Geography: “After the forest: environment, labor, and agro-commodity production in southeastern Brazil” (Karl S. Zimmerer, advisor)
M.S. 1992, University of Wisconsin-Madison, Department of Geography: “Almost a canal: visions of interoceanic communication across southern Nicaragua” (William M. Denevan, advisor)
A.B. 1990, International Relations, University of California, Davis

UNIVERSITY APPOINTMENTS
Director of Environmental Programs, College of Geosciences (effective 1 September 2014)
Professor, Department of Geography (effective 1 September 2013)
Associate Professor, Department of Geography (effective 1 September 2006)
Assistant Professor, Department of Geography (effective 28 August 2003) and member, Graduate Faculty, Texas A&M University (October 2003)
Part-time Lecturer, Department of Geography, California State University, Long Beach (August 2002-June 2003)
Lecturer in Environmental Studies and Convenor of MSc in Environmental Studies, Institute of Latin American Studies, University of London (September 1999-September 2002)

ACADEMIC PUBLICATIONS
A. EDITED BOOKS

B. JOURNAL ARTICLES (REFEREED)


sacrifice or conservation opportunity?” Ambio 38(3): 141-9 [doi: 10.1579/0044-7447-38.3.141]
Brannstrom, C., and A.M.S. Oliveira (2000) “Human modification of stream valleys in the western plateau of São Paulo, Brazil: Implications for environmental narratives and management,” Land
Degradation and Development 11(6): 535-48

C. BOOK CHAPTERS AND PROCEEDINGS PAPER (REFEREED)
Appendix D-167

vol. I, eds. J. J. Crocitti (Santa Barbara: ABS-CLIO), 20-4
caderno 1: retratos 3X4 das bacias pesquisadas (Brasília: FINATEC), 129-34.

D. REVIEW ESSAY

E. BOOK REVIEWS
Daniel D. Arreola, Postcards from the Río Bravo Border: Picturing the Place, Placing the Picture, 1900s-1950s (Austin: University of Texas Press), to be published in Journal of Historical Geography (submitted June 2014)
Nicholas Gabriel Arons, Waiting for Rain: The Politics and Poetry of Drought in Northeast Brazil


F. OTHER PUBLICATIONS OR REPORTS (NOT REFEREED)
Brannstrom, C., “Qual é o ‘milagre’ do Cerrado?” Jornal do São Francisco (Barreiras, Brazil), 15 October 2010, p. 36.
Brannstrom, C., Jepson, W., Persons, N., “Perceived Socioeconomic Impacts of Wind Energy in West Texas” (May 2010)

G. MANUSCRIPTS IN PREPARATION
Journal Articles
Brannstrom, C., “A sustentabilidade em função do uso não sustentável dos recursos naturais no Oeste Baiano e Eagle Ford Texano,” submitted Feb. 2015 to Revista Mercator (Brazil)
Fry, M., C. Brannstrom, Trey Murphy, “How Dallas became frack free: Hydrocarbon governance under neoliberalism,” submitted Jan. 2015 to Environment and Planning A

Book Chapters or Conference Papers
Brannstrom, C. “Temas e desafios na história ambiental (e na geografia histórica),” submitted 15 June 2013 to conference proceedings editor

RESEARCH PRESENTATIONS
A. INVITED PRESENTATIONS
“Desenvolvimento local e sustentabilidade: Perspectivas do Oeste Baiano e o Eagle Ford Texano,” Department of Geography, Universidade Federal do Ceará, Fortaleza, 3 Sept. 2014
“Temas e desafios na história ambiental (e na geografia histórica),” I Congresso Internacional de História – UNICENTRO – UEPG, Irati, Paraná, 14 May 2013

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“Temos na fronteira entre a história e a geografia,” Universidade Estadual de Ponta Grossa, Paraná, 10 May 2013

“Amber Arthun Warburton and the discovery of Hispanic child labor in the Lower Rio Grande Valley,” Hall Center for Humanities Research, University of Kansas, 9 March 2013

“Two hundred hectares of good business: Brazilian agriculture in a themed space,” Department of Geography, Texas A&M University, 7 September 2012

“Two hundred hectares of good business: Brazilian agriculture in a themed space,” Department of Geography, Oklahoma State University, 16 April 2012

“Contested ideas for irrigated agriculture in early-twentieth-century South Texas,” Glasscock Center for Humanities Research, Faculty Colloquium Series, 10 March 2010

“Environmental governance in Brazil’s soy belt,” Applied Biodiversity Science Seminar Series, Texas A&M University, 23 September 2009

“Environmental governance in Brazil’s soy belt,” Department of Geography, University of Kansas, 25 February 2009

“Extreme energy geographies,” Friends of Geography Annual Conference, Houston TX, 7 February 2009 (invited by World Affairs Council of Houston)

“Perspectivas sobre la descentralización,” Congreso Binacional del Agua, Saltillo, Mexico, 29-30 November 2007

“The historical geography of an energy hinterland: São Paulo, Brazil, 1900-1960,” Department of Geography, University of Texas-Austin, 26 March 2004

“Caracterização dos assoreamentos do Médio Paranaapanema,” V Encontro do Uso da Terra do Vale do Paranaapanema, Assis, Brazil, 21 November 2002

“Toward a political ecology of environmental policy reform: The case of water in Brazil,” Department of Geography, Texas A&M University, 14 November 2002

“Políticas públicas para os recursos hídricos,” Universidade Estadual de Feira de Santana, Brazil, 2 August 2002

“História ambiental: Epistemologias e ontologias,” Universidade Estadual de Feira de Santana, Brazil, 2 August 2002

“Trabalho e madeira: Relações de trabalho no desmatamento no Oeste Paulista, 1920 a 1965,” Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 11 July 2002

“Cadeia produtiva e relações de trabalho no desmatamento no Oeste Paulista, 1920 a 1965,” Universidade Estadual Paulista, Araraquara, Brazil, 10 July 2002


[untitled research seminar], Department of Geography, University of Edinburgh, 9 May 2002

“Cadeia produtiva e relações de trabalho no desmatamento no Oeste Paulista, 1920 a 1965,” Universidade Federal de Santa Catarina, Florianópolis, Brazil, 8 April 2002

“Cadeia produtiva e relações de trabalho no desmatamento no Oeste Paulista, 1920 a 1965,” Universidade Estadual Paulista, Assis, Brazil, 4 April 2002


“Labor and deforestation in western São Paulo, Brazil, 1920-1960,” Institute of Latin American Studies, University of Liverpool, 6 December 2001

“Talking to sediments: Reading environmental history from post-settlement alluvium in western São Paulo, Brazil,” Workshop on Nineteenth- and twentieth-century Latin American environmental history, Institute of Latin American Studies, University of London, 2-3 November 2001

“El proceso de desforestación en São Paulo, 1920 a 1965,” Primer Seminario Internacional de
Historia Ambiental, Universidad Nacional, Bogotá, Colombia, 15 August 2001
“O estudo das novas formas de gestão de recursos hídricos” and “Mão-de-obra e desmatamento em São Paulo, 1920 a 1965,” Núcleo de Estudos Ambientais, Universidade Estadual de Londrina, Paraná, 12 July 2001
“Environment, history and narratives in political ecology,” Department of Geography, University of Cambridge, 21 May 2001
“Rethinking the ‘Atlantic Forest’ of Brazil: Evidence, narratives and policy,” Department of Geography, King’s College London, 23 January 2001
“Producing possession: labour and land tenure on a Brazilian agricultural frontier, 1920-1945,” Department of Geography, University of Cambridge, 18 February 2000
“Explaining land degradation in southeastern Brazil,” Department of Geography, Kansas State University, Manhattan, KS, 19 February 1999
“Explaining land degradation in southeastern Brazil,” Department of Geography and Regional Studies, University of Miami, Miami, FL, 11 February 1999
“Explaining land degradation in southeastern Brazil,” Department of Geography and Urban Analysis, California State University, Los Angeles, 14 January 1999
“Degradação ambiental e mudança da agricultura no Oeste do Estado de São Paulo, 1900-1980,” Instituto de Pesquisas Tecnológicas de São Paulo, Divisão de Geologia, 12 March 1996
“Environmental degradation and social change in western São Paulo State, Brazil, 1900-1980,” Maxwell Latin American Forum, Syracuse University, 9 February 1995

B. PRESENTATIONS AT ACADEMIC CONFERENCES
“Determinants of variability in municipal setback distances,” American Planning Association (Texas Chapter), Frisco, TX, 17 October 2014 (session title: “Planning in the dark: Gas drilling and the uncertainties for Texas communities”)
“Amber Arthun Warburton and the discovery of Hispanic child labor in the Lower Rio Grande Valley,” Conference of Latin Americanist Geographers meeting, Panama City, Panama, 8 Jan. 2014
“Reflections on using Q-method in human-environment research,” Annual Meeting of the AAG, 10 April 2013, Los Angeles CA
“Human dimensions of environmental change: Perspectives from western Bahia state, Brazil,” Brazil-Texas A&M University Science and Education Internationalization, 26 March 2012, Porto de Galinhas, Pernambuco, Brazil
“The institutional scramble for the 20 percent: Governance and institutions in Brazil’s Cerrado,” Annual Meeting of the AAG, 27 February 2012, New York NY
“John Shary, Charles Pease, and contested irrigation landscapes in early-twentieth-century South Texas,” SWAAG Conference, 10 Nov. 2011, Austin TX

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“Governance and institutions in Cerrado land change: Perspectives from western Bahia state, Brazil,” Global Land Project Open Science Meeting, Arizona, 19 October 2010
(with N. Persons* and W. Jepson) “We don’t take the pledge: Environmental subjectivities in the epicenter of wind energy,” Annual Meeting of the AAG, 16 April 2010 (*presenting author)
“A Q-method analysis of environmental governance discourses in Brazil’s northeastern soy frontier,” Annual Meeting of the AAG, 18 April 2010
“Environmental Governance in Latin America’s Modern Agricultural Systems,” Congress of the Latin American Studies Association, 11-14 June 2009, Rio de Janeiro, Brazil
“As instituições e organizações no surto algodoeiro brasileiro, 1920 a 1955,” Fourth Meeting of the Sociedad Latinoamericana e Caribeña de Historia Ambiental, 28-30 May 2008, Belo Horizonte, Brazil
“Inventing the ‘Magic Valley’ of South Texas, 1900-1935,” (presented by Neuman), 1 Nov. 2007, SWAAG Conference, Bryan TX
“Hyperion and CBERS satellite image classification intercomparison for Cerrado and agricultural mapping” (presented by Filippi), Sept. 2007, SPIE Europe Remote Sensing, Florence, Italy
“State and Private Environmental Policymaking on a Neoliberal Agricultural Frontier,” Annual Meeting of the AAG, San Francisco, CA, 17 April 2007
(with Anthony M. Filippi) “Supervised classification of Cerrado (savanna) and agricultural land covers in northeastern Brazil’s agricultural frontier,” Annual Meeting of the AAG, Denver, CO, 9 April 2005
(with Anthony M. Filippi) “Remote classification of Cerrado (savanna) and agricultural land covers in Northeastern Brazil’s agricultural frontier,” 2nd Conference of Texas Brazilianists, University of Texas at Austin, 19 February 2005
“Land Cover and Land Use in North-Eastern Brazil’s Agricultural Frontier,” SWAAG Meeting, Nacogdoches TX, 12 November 2004
“El bosque como fuente de energía: El hinterland energético en la industrialización de São Paulo, Brasil, 1900-1960,” II Simposio de Historia Ambiental Americana, La Habana, Cuba, 26 October 2004
“Greening or greenwashing agriculture? Environmental policy reform on north-eastern Brazil’s agricultural frontier,” 1st Conference of Texas Brazilianists, University of Texas-Austin, 10 April 2004
“A political ecology of environmental policy reform on north-eastern Brazil’s agricultural frontier,” Meeting of the Southwest Association of American Geographers, Stillwater OK, 24 October 2003
“Democratic and administrative decentralization in Brazilian water-resources reforms,” Annual Meeting of the AAG, Los Angeles, CA, 23 March 2002
“O Cedap e a história ambiental regional,” II Encontro do CEDAP: Arquivos, Memória e
Tecnologia, Assis, SP, Brazil 27 April 2002
“Environmental degradation, agricultural change, and labor relations in western São Paulo, Brazil,” Annual Meeting of the AAG, Boston, MA, 25-29 March 1998
“Documentos do Arquivo do Fórum da Comarca de Assis (SP): uma fonte inédita para a história ambiental regional,” XIX Simpósio Nacional de História, Belo Horizonte, MG, Brazil 22 July 1997
“Modernity, deforestation, and peasant agriculture in the writings of Monteiro Lobato,” Annual Meeting of the AAG, Chicago, IL 14-18 March 1995
“Almost a canal: visions of interoceanic communication across southern Nicaragua,” Conference on Central America, University of Wisconsin-Eau Claire, 29 April 1994

C. ORGANIZED ACADEMIC CONFERENCE
Workshop on Nineteenth- and twentieth-century Latin American environmental history, Institute of Latin American Studies, University of London, 2-3 November 2001

D. ORGANIZED SESSIONS AT PROFESSIONAL MEETINGS
(with J. Vadjunec), “Political ecology and land change science,” Annual Meeting of the AAG, 27 February 2012, New York NY
“South American Agricultural Frontiers,” Annual Meeting of the AAG, Denver CO, 9 April 2005 (sponsored by the Cultural and Political Ecology, Human Dimensions of Global Change, and Latin America specialty groups)
“Agriculture, Technology, Environments,” 2nd Conference of Texas Brazilianists, University of Texas at Austin, 19 February 2005
“Remote Sensing of South American Environments,” SWAAG Meeting, Nacogdoches TX, 12 November 2004
“Nuevas historias sobre el bosque en América Latina y el Caribe” [three sessions], at the II Simposio de Historia Ambiental Americana, La Habana, Cuba, 25-26 October 2004
“Commodities I: Historical Perspectives,” Annual Meeting of the AAG, 15 March 2004

RESEARCH FELLOWSHIPS AND GRANTS
A. GRANTS RECEIVED
(as co-PI, with PI Matthew Fry), “Collaborative Research: Social Perspectives New Geographies of Shale Gas: Distance Regulation and Policy Mobilities in Texas,” National Science Foundation standard grant (TAMU component = $36,479; 1262526), awarded April 2013
(as co-PI, with PI W. Jepson), “Geographic Information Science and Technology (GIST) for Introductory Human Geography Core Courses,” TAMU-CIS, Feb. 2013, –$75,000
(as co-PI, with PI Chris Houser) “Perception of the rip current hazard on Galveston Island and South Padre Island,” funded Feb. 2012, Texas Sea Grant College Program ($137,992)
(as co-PI, with PI W. E. Jepson) “Socioeconomic impacts of wind energy in Texas,” TCU-NextEra Wind Initiative, awarded December 2009 ($48,382)
“The Making of an Irrigated Agricultural Landscape in the Lower Rio Grande Valley of South Texas, 1900-1945,” Glasscock Center for Humanities Research (TAMU), Stipendary Fellowship, awarded May 2009 ($1,500)
(as co-PI, with PI W. E. Jepson) “Socioeconomic impacts of wind energy in Texas,” TCU-NextEra Wind Initiative, awarded December 2008 ($73,356)
“The Making of an Irrigated Agricultural Landscape in the Lower Rio Grande Valley of South Texas, 1900-1945,” Glasscock Center for Humanities Research (TAMU), Faculty Travel to Archives/Field Work grant program, awarded May 2008 ($750)
“A Q-method analysis of environmental governance in Brazil’s northeastern soy belt,” National Science Foundation, Geography and Regional Science Program, awarded April 2007 (BCS-0647249) ($40,599)
(Brannstrom, PI, with co-PIs W. E. Jepson, A. M. Filippi) “Land-cover change on a modern agricultural frontier: The case of western Bahia (Brazil), 1979-2004,” National Geographic Society, Committee for Research and Exploration (#7856-05) ($13,416) (awarded May 2005)
British Academy Overseas Conference Grant (OCG-33483), toward participation at the 2002 Annual Meeting of the Association of American Geographers (£438) (2001)
British Academy Conference Grant (BCG-32852), toward conference “Nineteenth- and twentieth-century Latin American environmental history” (£1,600) (2001)
Central Research Fund, University of London, “Environmental management of globalised agriculture” (£810) (2001)
Regular Training Program Fellowship (PRA), Organization of American States (F44890) ($12,150 plus airfare) (1996-1997)
Dissertation Improvement Award, National Science Foundation, Geography and Regional Science Program (SBR-9508433) ($8,700) (1995-1997)

B. GRANT PROPOSALS SUBMITTED

UNIVERSITY TEACHING
A. DOCTORAL SUPERVISION AND EXAMINATIONS
Advisor or Co-Advisor


Anna Santos, Geography, Texas A&M University (Sep. 2011-present; PhD defense Dec. 2014): “Determinants of livelihood strategies in a marine extractive reserve”

Thomas Loder, Geography, Texas A&M University (ABD, March 2015)

Committee member (all Geography, Texas A&M University, unless noted)
Yolanda McDonald (May 2014-present); Swetha Peteru (May 2012-present); Kelly Lemmons (graduated Dec. 2013); Abhineety Goel (graduated May 2013); Audrey Joslin (May 2010-present); Carena Van Riper, Recreation, Parks and Tourism Sciences, Texas A&M University (graduated May 2014); Seoyeon Nam (Sept. 2011-present); Heather Lee (Sep. 2011-present); Daniel J. Redo (graduated May 2010); J. Wayne Prosser (graduated May 2009); Fernanda Pegas, Recreation, Parks and Tourism Sciences, Texas A&M University (graduated May 2009); Wendy Patzewitsch (graduated May 2007)

Internal examiner
Hur Ben Corrêa da Silva, London School of Economics and Political Science, University of London (March 2001); Ernesto Sánchez Vera, Imperial College at Wye, University of London (March 2001)

External examiner
Claudio Albuquerque Frate, Centro de Desenvolvimento Sustentável, Universidade de Brasília (August 2011)

B. MASTER’S SUPERVISION AND EXAMINATION
Committee chair: Kellie Wilcox-Moore, Geography, Texas A&M University (graduated, May 2010); Nicole Persons, Geography, Texas A&M University (graduated, May 2010); Sasha Broadstone, Geography, Texas A&M University (Dec. 2012-present); Mary Tilton, Geography, Texas A&M University (co-chair, May 2012-present), Trey Murphy, Geography, Texas A&M University (Dec. 2014-present)

Committee member: Jamie Ricci, Geology, Texas A&M University (graduated, May 2014); Veit Bachman, Geography, Texas A&M University (graduated, May 2006); Jeremiah Wagstaff, Geography, Texas A&M University (graduated, Dec. 2006); Indumathi Srinath, Geography, Texas A&M University (graduated, Dec. 2009)

Instructor [Docente], Master’s program in History, Identity and Cultures [História, Cultura e Identidades], Universidade Estadual de Ponta Grossa, Paraná, Sept. 2014-present
-Co-supervisor, Lucas Vinicius Erichsen da Rocha, Universidade Estadual de Ponta Grossa, Paraná (defended April 2015)

Examiner: Marcos Gerhardt, “Colonos, caboclos, estancieros e o estado modificam o meio ambiente: O caso de Ijuí”, Universidade Estadual de Londrina, Brazil, 3 April 2002

Supervisor (2001-2002): James Clarke, “An analysis of state-society relations in the context of an anti-dam mobilisation in southern Brazil” (Institute of Latin American Studies; ILAS); Mariana Newport, “Making decentralisation and participation in water resource management work for rural women: The case of the Itapicuru basin” (ILAS); Elisabeth Ringhofer, “An analysis of policy alternatives to coca cultivation in Bolivia” (ILAS); Claire Rossiter, “Evaluating transnational advocacy networks: The Ecuadorian OCP and the Bolivian gas pipelines” (ILAS); Elisabet López-Ibiricu, “An analysis of the debate on the impacts of trade liberalization and environment in Latin America” (ILAS); Erika Torres Luquin, “Evaluating the social and environmental impacts of ecotourism” (ILAS); Marcelo
Silva Lima, “Is soyabean production the new threat to the Amazon rainforest region?” (ILAS)
Supervisor (2000-2001): Renato J. Stancato de Souza, “Toward a transnational civil society: the GM debate in Brazil” (ILAS); Adriana Amico, “Agroforestry in the Putumayo region of the Peruvian Amazon as part of the alternative development paradigm” (ILAS); David Bird, “Agri-environmental regulatory regimes: genetically modified crops in Brazil and Argentina” (ILAS); Louise Clark, “Microfinance and organic conversion amongst smallholders in Chiapas, Mexico” (ILAS); Mark Davis, “Agricultural development, microfinance and the rural poor: financial services and the support of small scale commercial agroforestry in Central America” (ILAS); Anna Carla Lopez, “Meeting household food security needs in Nicaragua: a political-ecological analysis of national versus household strategies” (ILAS); Toby Shobbrook, “Global agricultural restructuring: a case study of GM soya in Argentina” (ILAS)

C. GRADUATE AND UNDERGRADUATE TEACHING
Texas A&M University, Department of Geography (August 2003-present)

Graduate Courses
Human Impacts on the Environment (Geog. 619)
Geographical Research Design (Geog. 611)

Undergraduate Courses
Human Geography (Geog. 201)
Global Village (Geog. 202)
Latin America (Geog. 323)
Resources and Environment (Geog. 330)
Geography of Energy (writing-intensive) (Geog. 309-900)
Global Change (writing-intensive) (Geos 410)
Directed Studies and Research (Geog. 485 or 491, or INTS 491; 3 credit hours) (K. Stock, Fall 2005; R. Evans, Fall 2005; N. Bacchus, Spring 2006; J. Nichols, Spring 2007; M. Herrera, Spring 2007; B. Freeman, Spring 2008; W. Kimbell, Summer 2008; N. Boriski, Spring 2009; C. Mitchell, Spring 2009; A. Kelly, Spring 2009; J. Poehl, Fall 2009; D. Aertker, Fall 2010; D. Boone, Fall 2010)

Faculty-Led Study Abroad
  Summer 2014 (Costa Rica): Field Geography (Geog. 450)
  Summer 2013 (Costa Rica and Nicaragua): Field Geography (Geog. 450)
  Summer 2011 (Costa Rica): Field Geography (Geog. 450)
  Summer 2010 (Brazil): Environmental Workshop (Geog. 380); Field Geography (Geog. 450)
  Summer 2008 (Brazil): Special Topics: Geography of Brazil (Geog. 489); Field Geography (Geog. 450)
  Summer 2005 (Brazil): Special Topics: Geography of Brazil (Geog. 489); Environmental Workshop: Environmental Issues in Developing Countries (Geog. 380)
Other
iGIS faculty participant, Nov. 2014
GeoX faculty participant, June 2011, June 2012, June 2014
Undergraduate Research Scholar Thesis, Trey Murphy, “Barnett Shale municipal oil and
gas ordinance dynamics: A spatial perspective,” Spring 2014

California State University, Long Beach, Department of Geography (August 2002-May 2003)
Upper-Division Courses
United States and Canada (Geog. 306)
Latin America (Geog. 320-I)
South Asia (Geog. 314-I)
Global Environmental Issues (Geog. 355)
Lower-Division Courses
World Regional Geography (Geog. 100)
Human Diversity in the U.S. (Geog. 120)

Institute of Latin American Studies, University of London (September 1999 to June 2002)
Post-Graduate Courses
Environment and Society in Latin America
Agriculture and Development in Latin America

University of California, Los Angeles, Department of Geography (Spring and Summer, 1999)
Upper-Division Courses
Mexico, Central America, and Caribbean (Geog. 181)
Spanish South America (Geog. 182A)
Lower-Division Course
People and the Earth’s Ecosystems (Geog. 5)

California State University, Los Angeles, Department of Geography and Urban Analysis (Winter
and Summer 1999)
Upper-Division Course
World Resources and Environmental Issues (Geog. 341)
Lower-Division Course
Introduction to Human Geography (Geog. 150)

UNIVERSITY ADMINISTRATION AND SERVICE
A. COMMITTEE MEMBERSHIP: UNIVERSITY
Member, Melbern G. Glasscock Center for Humanities Research Advisory Committee (Sept. 2012-
May 2014)
Member, W and C Course Advisory Committee, Texas A&M University (Sept. 2009-Aug. 2014)
Member, Rules and Regulations Committee, Texas A&M University (Sept. 2007-2010 [?])
Member (elected), University Honor Council, Texas A&M University (May 2007-May 2011)
Member, proposal review committee, International Research Travel Assistance Grant, Texas A&M
University, Spring 2007
Member, Minority Recruitment and Retention Leadership Team: Retention, Engagement, and
Success Subcommittee, Texas A&M University (2006-2007)

B. COMMITTEE MEMBERSHIP: COLLEGE
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Undergraduate Curriculum Committee, College of Geosciences, Texas A&M University (Sept. 2014-present)
Environmental Programs Advisory Committee, College of Geosciences, Texas A&M University (Sept. 2008-Jan. 2014)

C. COMMITTEE MEMBERSHIP: DEPARTMENTAL
Member, Graduate Committee, Department of Geography, Texas A&M University (Sept. 2014-)
Chair, Graduate Committee, Department of Geography, Texas A&M University (Aug. 2011-May 2014)
Member, Self-Study Committee, Department of Geography, Texas A&M University (Jan.-April 2011)
Ad hoc subcommittee (O’Reilly), Tenure and Promotion Committee, Department of Geography, Texas A&M University (June 2010)
Member, Search Committee (Human Geographer), Department of Geography, Texas A&M University (Oct. 2009-Mar. 2010)
Ad hoc subcommittee (Filippi), Tenure and Promotion Committee, Department of Geography, Texas A&M University (July 2009)
Third-Year Review Committee (O’Reilly), Department of Geography, Texas A&M University (Sept. 2008)
Graduate Committee, Department of Geography, Texas A&M University (March 2006-Aug. 2011)
SWAAG Organizing Committee, Department of Geography, Texas A&M University (May 2007-Nov. 2007)
Tenure and Promotion Committee (LaFon), Department of Geography, Texas A&M University (May 2006)
Search Committee (Assistant Professor in Surficial Processes), Department of Geography, Texas A&M University (October 2005-February 2006)
Search Committee (Assistant Professor in Climatology), Department of Geography, Texas A&M University (September 2004-December 2004)
Search Committee (Professor in Environmental Geography), Department of Geography, Texas A&M University (September 2003-May 2004)
Dissertation Co-ordinator, Institute of Latin American Studies, University of London (September 2000 to September 2002)

D. COMMITTEE MEMBERSHIP: OTHER
Member, Curriculum Committee, IGERT: Applied Biodiversity Conservation, Texas A&M University, Sept. 2010-Aug. 2014
Chair, Admissions Committee, IGERT: Applied Biodiversity Conservation, Texas A&M University, February-March 2010
Member, Selection Committee, Andrew Hill Clark Award for papers written at PhD level, AAG Historical Geography Specialty Group (Jan. 2010, Jan. 2011)
Member, Admissions Committee, IGERT: Applied Biodiversity Conservation, Texas A&M University, March 2009
Committee Member, Senate House Local Association, Association of University Teachers (November 2001 to June 2002)
Student Admissions Committee, School of Advanced Study, University of London (January-June 2001)
E. PANELS AND SYMPOSIA PARTICIPATION
Panelist, “Student/Faculty Panel: A Personal Perspective of Academic Integrity,” Texas A&M University (24 September 2004)

F. OUTREACH AND RECRUITMENT
Graduate student recruitment for Applied Biodiversity Science program, UT-Panamerican, Edinburg, TX (October 2008)
Graduate student recruitment at TAMUS Pathways Symposium, Kingsville (October 2005)
Graduate student recruitment at TAMUS Pathways Symposium, Corpus Christi (15-16 October 2004)
Graduate student recruitment and professional outreach to Texas A&M University Kingsville, Corpus Christi, and Laredo (23-25 February 2004)

G. PROFESSIONAL GROUPS
Elections Officer, Historical Geography Specialty Group, Association of American Geographers, 2003-06

TEACHING AWARDS
Association of Former Students, Distinguished Achievement Award (teaching), College of Geosciences, Texas A&M University (2013)
Gateway Faculty award, General Academic Programs office (2011)

PROFESSIONAL ACTIVITIES
A. JOURNAL OR CHAPTER MANUSCRIPT REVIEWS

B. BOOK MANUSCRIPT REVIEWS
Rowman & Littlefield (2004); University of Arizona Press (2006); Editora da Universidade Estadual de Maringá (2008); Wiley (3 chapters world regional geography, 2009)

C. GRANT PROPOSAL OR SCHOLARSHIP REVIEWS
Proposal Reviewer, Social Sciences and Humanities Research Council (Canada), 2015
Member, Outer Assessment Board, Irish Research Council (Postgraduate Scheme, 14 proposals), March 2014
Proposal Reviewer, TAMU-CAPES Collaborative Research Grant Program, Feb. 2014
Member, National Screening Committee, 2013-2014 U.S. Student Fulbright Program (Brazil, ~60 proposals), Dec. 2012, Houston TX
Member, National Screening Committee, 2012-2013 U.S. Student Fulbright Program (Brazil, Ecuador, ~60 proposals), December 2011, Denver CO
Member, National Screening Committee, 2010-2011 U.S. Student Fulbright Program (BRZ 1, ~60 proposals), December 2009, Denver CO
Proposal Reviewer, TAMU-CONACyT grant program (May 2009)
Member, IGERT Preproposal Panel, National Science Foundation, June 2008, Washington, D.C.
Member, Selection Panel, Baker Hughes Scholars Program in Angola, 11 April 2008, Houston TX

D. PROFESSIONAL SERVICE
Co-Editor (with F. Driver and M. Ogborn), Journal of Historical Geography (from Jan. 2013)
Member, Advisory Board, Oxford Bibliographies in Geography, ed. B. Warf (Oxford University Press) (from 21 Sep. 2012)
Chair, Conference of Latin Americanist Geographers (1 July 2012-30 June 2014)
Member, Editorial Board, Historical Geography (Dec. 2010-present)
Contributing Editor (Geography: Brazil), Handbook of Latin American Studies (April 2008-present)
Member, International Advisory Board, Bulletin of Latin American Research (UK) (2004-present)
Member, Conselho Consultivo, Revista de História Regional (Ponta Grossa, Brazil) (2008-present)
Member, Conselho Científico, Revista Mercator (Fortaleza, Brazil) (2011-present)
Member, Conselho Científico, Revista de Geografia (Recife, Brazil) (c. 2012-present)
Tenure and Promotion evaluations (University of New Mexico, 2012; Texas State University, 2014; University of Maryland Baltimore County, 2014)

17 April 2015
Appendix E: Degree Plans

COLLEGE OF GEOSCIENCES
TEXAS A&M UNIVERSITY
BACHELOR OF SCIENCE IN ENVIRONMENTAL GEOSCIENCES
201531 CATALOG

STUDENT: _____________________________________________________________________
HOME DEPARTMENT: Environmental Programs, College of Geosciences

<table>
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<tr>
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<tr>
<td>Introductory Geosciences Course A</td>
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<td>BIOL 111</td>
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<td>CHEM 101/111</td>
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<td>TOTAL HRS</td>
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</table>

TOTAL HOURS FOR DEGREE: 120

Other requirements to be satisfied (see Core Curriculum and Degree Information sections of 2014 University Undergraduate Catalog)

- Residency requirement
  - 36 hours of 300- and/or 400-level coursework successfully completed in residence at TAMU

- Foreign language requirement
  - Two units of the same foreign language in high school or one year in college or demonstrate proficiency by examination

- International and cultural diversity requirement
  - 6 hrs., chosen from a list of approved courses, many of which also satisfy other core curriculum requirements

- Writing intensive (W) course requirement
  - at least two courses in the College of Geosciences; must be 900 section

NOTES

See Academic Advisor for questions or help selecting elective choices.

1. Freshmen entering the program take a Geosciences First Year Seminar. Students transferring into the program, or who have not taken a first year seminar, are required to take GEOG 481 Geosciences Seminar in their junior or senior year.

2. Choose 10 hours of technical electives from Table 2, or courses offered in other colleges (see website for definition of a technical elective).


4. Choose 18 hours of coursework from one of the following themes in Table 1: Climate Change, Coastal and Marine Environments, Human Impact on the Environment, Biosphere, and Water. Always check for prerequisites! Please see the online catalog for prerequisites for all elective courses. We encourage you to take 484 Internship, 485 Directed Studies, or 491 Research credit. These can be applied as a policy, theme, or technical elective. Meeting degree requirements with study abroad courses is also encouraged.

5. Other Communications elective to be selected from the University Core Curriculum.

6. Choose from ATMO 201 Atmospheric Science and ATMO 202 Atmospheric Science Lab, GEOG 203 Planet Earth and GEOG 213 Planet Earth Lab, GEOL 101 Principles of Geology, or OCNG 251 Oceanography and OCNG 252 Oceanography Lab.

7. Philosophy, Language, and Culture elective to be selected from the University Core Curriculum. It is recommended to take a course also on the International and Cultural Diversity list for this requirement.

8. Creative Arts elective to be selected from the University Core Curriculum. It is recommended to take a course also on the International and Cultural Diversity list for this requirement.

9. Select from University Core Curriculum American History.
## Table 1. Environmental Themes

<table>
<thead>
<tr>
<th>Biosphere</th>
<th>Climate Change</th>
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<tr>
<td><strong>CORE COURSES</strong></td>
<td><strong>CORE COURSES</strong></td>
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<tr>
<td>GEOG 335 Pattern &amp; Process in Biogeography</td>
<td>GEOS 210 Climate Change</td>
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<td>GEOL 305 Paleobiology</td>
<td>GEOS 444 The Science and Politics of Global Climate Change</td>
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<td>OCNG 420 Introduction to Biological Oceanography</td>
<td>PHYS 202 College Physics II</td>
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<td><strong>ELECTIVES</strong></td>
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<td>GEOG/GEOS 442 Past Climates</td>
<td>ATMO 324 Physical and Regional Climatology or GEOG 324 Global Climatic Regions</td>
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<tr>
<td>GEOG 435 Plant Geography</td>
<td>ATMO 363 Introduction to Atmospheric Chemistry and Air Pollution</td>
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<td>*OCNG 401 Interdisciplinary Oceanography</td>
<td>ATMO 463 Air Pollution Meteorology</td>
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<tr>
<td>OCNG 425 Microbial Oceanography</td>
<td>GEOF/GEOS 442 Past Climates</td>
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<tr>
<td>BIOL 214 Genes, Ecology, and Evolution</td>
<td>GEOL 305 Paleobiology</td>
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<tr>
<td>BIOL 357/358 Ecology</td>
<td>GEOL 306 Sedimentology and Stratigraphy</td>
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<tr>
<td>GENE 302 Principles of Genetics</td>
<td>GEOL 451 Intro to Geochemistry</td>
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<td>GENE 412 Population and Ecological Genetics</td>
<td>GEOS 401 Polar Regions of the Earth: Science, Society and Discovery</td>
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<tr>
<td>SCSC 301 Soil Science</td>
<td>GEOS 410 Global Change</td>
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<td>SCSC 316/MEPS 316 Theory and Practice of Plant Physiology</td>
<td>*OCNG 401 Interdisciplinary Oceanography</td>
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<td><strong>Coastal and Marine Environments</strong></td>
<td><strong>Human Impact on the Environment</strong></td>
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<td>GEOG 370 Coastal Processes</td>
<td>GEOS 430 Global Science and Policy Making</td>
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<td>*OCNG 401 Interdisciplinary Oceanography</td>
<td>GEOG 430 Environmental Justice</td>
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<td>GEOG 331 Geomorphology</td>
<td>ATMO 326 Environmental Atmospheric Science</td>
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<td>GEOG 360 Natural Hazards</td>
<td>ATMO 363 Introduction to Atmospheric Chemistry and Air Pollution</td>
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<td>GEOL 306 Sedimentology and Stratigraphy</td>
<td>GEOF 309 Geography of Energy</td>
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<td>GEOL 440 Engineering Geology</td>
<td>GEOS 360 Natural Hazards</td>
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<td>GEOS 401 Polar Regions of the Earth: Science, Society and Discovery</td>
<td>GEOS 401 Political Geography</td>
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<tr>
<td>GEOS 444 The Science and Politics of Global Climate Change</td>
<td>GEOL 301 Mineral Resources</td>
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<td>OCNG 350 Marine Pollution</td>
<td>GEOL 410 Hydrogeology</td>
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<td>OCNG 410 Introduction to Physical Oceanography</td>
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<td>OCNG 420 Introduction to Biological Oceanography</td>
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<tr>
<td>OCNG 430 Introduction to Geological Oceanography</td>
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<tr>
<td>OCNG 440 Introduction to Chemical Oceanography</td>
<td>GEOS 444 Science and Policies of Climate Change</td>
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<td>WFSC 418 Ecology of the Coastal Zone</td>
<td>OCNG 350 Marine Pollution</td>
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<td>WFSC 425 Marine Fisheries</td>
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<tr>
<td>WFSC 428 Wetland Ecosystem Management</td>
<td>OCNG 440 Introduction to Chemical Oceanography</td>
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<tr>
<td>GEOG 434 Hydrology and Environment</td>
<td>ATMO 321 Computer Applications in the Atmospheric Sciences</td>
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<td>GEOL 410 Hydrogeology</td>
<td>ATMO 441 Satellite Meteorology and Remote Sensing</td>
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<td>ATMO 464 Lab Methods in Atmospheric Sciences</td>
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<td>AGSM 335 Water and Soil Management</td>
<td>GEOF 312 Data Analysis Methods in Geography</td>
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<td>AGSM 337 Technology for Environmental and Natural Resource Engineering</td>
<td>GEOF 361 Remote Sensing in Geosciences</td>
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<td>ATMO 251 Weather Observation and Analysis</td>
<td>GEOF 380 Workshop in Environmental Studies</td>
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<td>ATMO 324 Physical and Regional Climatology or GEOG 324 Global Climatic Regions</td>
<td>GEOF 390 Principles of Geographic Information Systems</td>
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<td><strong>ATMO 335 Atmospheric Thermodynamics</strong></td>
<td>GEOF 450 Field Geography</td>
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<tr>
<td>ATMO 352 Severe Weather and Mesoscale Forecasting</td>
<td>GEOF 462 Advanced GIS Analysis for Natural Resource Management</td>
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<tr>
<td>ATMO 443 Radar Meteorology</td>
<td>GEOF 467 Dynamic Modeling of Earth and Environmental Systems</td>
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<td>GEOG 331 Geomorphology</td>
<td>GEOF 475 Advanced Topics in GIS</td>
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<td>GEOG 360 Natural Hazards</td>
<td>GEOF 476 GIS Practicum</td>
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<td>GEOL 440 Engineering Geology</td>
<td>GEOF 309 Intro Geologic Field Methods</td>
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<td>GEOL 451 Geochemistry</td>
<td>GEOL 330 Geologic Field Trips</td>
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<td>GEOS 401 Polar Regions of the Earth: Science, Society and Discovery</td>
<td>GEOL/GEOG 352 GNSS in the Geosciences</td>
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<td>OCNG 350 Marine Pollution</td>
<td>GEOF 413 Near-Surface Geophysics</td>
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<td>OCNG 451 Mathematical Modeling of Ocean Climate</td>
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<tr>
<td>OCNG 440 Introduction to Chemical Oceanography</td>
<td>*** 491 Undergraduate Research (from any department, by approval)</td>
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<td>SCSC 455 Environmental Soil Science</td>
<td>Or other course that fits the definition of a technical elective: upper level course focused on lab, computer, field work, or some other technical skill. Seek approval from advisor before enrolling.</td>
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<td>SCSC 458 Watershed &amp; Water Quality Management</td>
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*Cannot take OCNG 401 if you have already taken OCNG 251.
### Major Coursework

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<td>or</td>
<td>GEOS 210</td>
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<td>Intro to Human Geography</td>
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<td>Resources and Environment</td>
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<td>Pattern and Process in Biogeography</td>
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### Communications

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### Life and Physical Sciences

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<td>GEOS 304</td>
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<tr>
<td>GEOS 430</td>
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<td>Global Science and Policy Making</td>
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<td>PHL 314</td>
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<td>Environmental Ethics</td>
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### Philosophy, Language, and Culture

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### Technical Electives

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<td>GEOS 304</td>
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<td>Economic Geography</td>
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<td>GEOS 430</td>
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<td>Global Science and Policy Making</td>
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<tr>
<td>PHL 314</td>
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<td>3</td>
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<tr>
<td>RENR 470</td>
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<td>Environmental Impact Assessment</td>
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### Writing Intensive (W) Course Requirement

At least two courses in the College of Geosciences must be 900 section.
NOTES
See Academic Advisor for help selecting elective choices below. Refer to the undergraduate catalog for prerequisites to electives. Students are encouraged to receive credit for internships, directed studies, and research to use towards their geosciences, environmental policy, or technical elective areas as 484, 485, or 491 course codes. Meeting degree requirements with study abroad courses is also encouraged.

1. The topic covered in GEOG 380 changes depending on the semester. It can be repeated up to three times for credit to use elsewhere in degree.
2. Freshmen entering the program take a Geosciences First Year Seminar. Students transferring into the program, who have not taken a first year seminar, are required to take GEOS 481 Geosciences Seminar in their junior or senior year.
3. Select 6 hours of Geosciences electives from Table 1.
4. Remaining 3 hours of technical electives normally to be selected from Table 2, or courses offered in other colleges (see website for definition of technical electives).
5. Select 9 hours of environmental policy electives from Table 3.
6. Other Communications elective to be selected from the University Core Curriculum.
7. Select from ATMO 201 Atmospheric Science and ATMO 202 Atmospheric Science Lab, GEOG 203 Planet Earth and GEOG 213 Planet Earth Lab, GEOL 101 Principles of Geology, or OCNG 251 Oceanography and OCNG 252 Oceanography Lab.

Combinations to meet the 8 hour science requirement include:
- BIOL 101 and BIOL 107
- BIOL 101 and CHEM 101/111
- BIOL 107 and CHEM 101/111
- BIOL 111 and CHEM 101/111
- CHEM 101/111 and CHEM 102/112
9. Philosophy, Language and Culture elective to be selected from the University Core Curriculum. It is recommended to take a course also on the International and Cultural Diversity list for this requirement.
10. Creative Arts elective to be selected from the University Core Curriculum. It is recommended to take a course also on the International and Cultural Diversity list for this requirement.
11. Select from any University Core Curriculum American History.

<table>
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<tbody>
<tr>
<td>ATMO 321 Computer Applications Atmospheric Science</td>
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<tr>
<td>ATMO 326 Environmental Atmospheric Science</td>
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<td>ATMO 363 Introduction to Atmospheric Chemistry and Air Pollution</td>
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<tr>
<td>ATMO 463 Air Pollution Meteorology</td>
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<td>GEOG 324 Global Climatic Region</td>
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<td>GEOG 331 Geomorphology</td>
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Appendix E-186
Appendix F: Essential Desirable Curriculum

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<p>| Critical | Required       |                |            |          |                      |     |                        |       |                     |     |                        |          |                        |            |                     |
| Essential | Required within elective areas |                |            |          |                      |     |                        |       |                     |     |                        |          |                        |            |                     |
| Desirable | Like in fall, but happy with spring |                |            |          |                      |     |                        |       |                     |     |                        |          |                        |            |                     |</p>
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Appendix G: Calls for Support and Internship Program

UNDERGRADUATE STUDENT SCHOLARSHIP SUPPORT
REQUEST FOR APPLICATIONS, Spring and Summer 2015

The Environmental Programs in Geosciences supports high-impact learning activities for ENGS and ENST majors, such as undergraduate research, conference participation, study abroad, internship, and specialized training (e.g. OSHA 40). This call is for requests of scholarship support for expenditures that will be incurred BEFORE September 1, 2015. (In case you are not yet sure of summer plans, we will issue another call for support around March 2015).

Deadline: applications should be sent by E-MAIL ONLY to Emily Dykes at edykes@tamu.edu with the subject line “Call for Support Application” by 5pm Friday, 9 January 2015.

Questions? Please contact Christian Brannstrom, Program Director, 202A CSA or cbrannst@geos.tamu.edu.

Requirements: You must be registered as a major in BS ENST or BS ENGS with a GPA of at least 2.5.

Name: ____________________________ UIN:_____________________ Graduation Date:________________

Major: ENST    ENGS GPA: _____  Brief description of activity: ____________________________

Where will the activity take place? _________________________________ When? ______________________

Will you be receiving course credit for this experience?☐Yes ☐No  If yes, how many hours? __________

If yes, what courses and how will it be used in your degree? _________________________________________

Fill out the following chart detailing the estimate expenses. **We envisage offering scholarships up to $500. If you require more than this, you will need to make this clear with a special justification in your application.** Please be aware that this scholarship may be considered with your overall student financial aid package. You may wish to consult with student financial aid office if you are concerned with any potential impact.

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<th>Expense categories (examples include: In-country Travel, Airfare, Food, Fees, Accommodations, Supplies, etc.)</th>
<th>Amounts in $ (rounded to nearest $10)</th>
<th>Source of funds (personal savings, family, loans, scholarship, etc. If there is a certain expense you are requesting ENVP to cover, note that here)</th>
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Will the funds be used for a project or item that involves a TAMU faculty member?  

☐ Yes  ☐ No

If yes, please provide faculty name: ___________________________ Dept.: __________________

Please provide a detailed description of the experience for which you are requesting scholarship funds.

How will receiving the scholarship and participating in this high impact activity enhance your undergraduate education?
Course Agreement for GEOS 484: Environmental Internships
Environmental Programs in the College of Geosciences
Texas A&M University
Tel: (979) 845-2559; Fax: (979) 845-0056

Student name_______________________________ UIN___________________  Major__________  Classification_________
Semester to receive credit _______________ # of Credit hours*___ Section number**___ Deadline of paper**___________
Will you be within 50 miles of College Station? ___Will you be enrolled in other courses at A&M while receiving credit?____
Location the credit will be used in degree plan ________________________________________________________________
Cell phone number_______________________  Email address___________________________________________________
Emergency contact name________________________ Relationship_______________ Phone number____________________

*Maximum of 3 hours of credit in a fall or spring semester. Maximum of 6 hours of credit in a summer semester.
**To be filled out by Academic Advisor.

Instructions
1. Students may be able to earn credits for internships related to their field of study. Students interested in receiving credit for their internship need to complete and turn in this form before the internship begins. Students can choose to register for GEOS 484 Internship the semester of the internship or, if the internship takes place in the summer, they may choose the fall semester. Credit cannot be given for an internship after it is completed without prior arrangements made.
2. Student and internship host supervisor must complete and sign this form then turn it in to Emily Dykes for remaining signatures. Fax copy is acceptable. Once approval is granted, the student will be enrolled in a section of GEOS 484 by Emily. Please attach official job posting or list of expected responsibilities to this form.
3. Once you are registered for the course, pay tuition and fees as usual by the University deadline. You will be charged tuition and fees like a regular course.

Course Requirements for Internships
1. The student will be eligible to receive 1 hour of credit for every 80 hours of work. A student can receive no more than 6 total hours of 484 internship credit. Students who wish to postpone the credit to the fall semester after a summer internship will only be allowed to register for 3 hours of credit.
2. The student’s work will be supervised by the internship host. The student is also required to submit a Final Report, following attached protocols. Students must discuss the Final Report with the ENVP Program Director.
3. The Final Report, along with an evaluation form from the internship host indicating whether the student has successfully completed the expected work, must be turned in to the Program Coordinator, Emily Dykes, at least three days before the final grades of the class are due. For summer internships, this is typically early August.

Internship host company_________________________________ Type of host company_______________________________
Internship supervisor name_______________________________ Supervisor Title____________________________________
Company address_______________________________________ City_____________________ State_____ Zip___________
Telephone number________________  Fax number_______________ Email________________________________________
Internship position title_________________________________ Start date_________________   End date________________
Approximate hours per week_________ Approximate total hours_________ Rate of pay, if any__________________
Any other paid expenses? If so, what?_______________________________________________________________________

I agree to my responsibilities according to the instructions and requirements described above.

Student signature _____________________________________________________________  Date ______________
Internship host signature________________________________________________________  Date ______________

Office use only:
Director signature _________________________ Pre-Internship Meeting: _____________________ Date ______________
Advisor signature __________________________________________ Date section was created ____________________
Requirements for Student Final Report
GEOS 484 Environmental Internship

Environmental Programs
College of Geosciences
Texas A&M University
College Station, TX 77843-3148

Requirements for Student Final Report
An internship is a valuable experience that provides you with professional development, network opportunities, and insight into related careers. In order for the Program Director to assign a grade for your internship credit, a report is needed from you describing your internship experience. The preparation of this report will also help you evaluate your professional development leading to your career goals. Your report must be received by Emily Dykes, Program Coordinator, prior to the last day of final examinations of the semester. Reports can be hand-delivered, emailed, faxed, or mailed to the Environmental Programs Office.

Requirements of your final report:
1. Describe the firm, agency, or organization. How many people worked in your unit? To whom was your manager accountable? What opportunities are available for upward mobility within the firm or agency? How do other people in your firm or unit network with other professionals in their field?
2. Describe your job responsibilities. Use a “typical day” approach to describe your normal daily tasks. Describe any major project or initiative in which you participated. Did the internship duties change over time? What were professional behavior expectations? Were you academically and/or professionally prepared for this internship? Would you have benefited from specific training or classes before participating in this internship? Did the internship align with your expectations?
3. Reflection. Did this internship change plans you have for future courses or career choices? Did the internship added value to your undergraduate education? Did you benefit from participating in an internship? Do you recommend an internship with this firm, agency, or organization to other students?

The report should be ~2000 words, written in the form of a business Memorandum, following the format attached. You must address all points above, and include any other comments, observations, or experiences not specified above in the final section, “Other Observations.” Pictures of you on your internship may be included. Your supervisor should be given the opportunity to review your report before final submission. This procedure will help to avoid release of any confidential or restricted information from your employer’s point of view.

Turn in your report to Dr. Brannstrom and/or Emily Dykes by ONE the following methods:
1. Hand-deliver it to the Environmental Programs’ Office in O&M 105.
2. Email it to Dr. Brannstrom at cbrannst@tamu.edu AND Emily Dykes at edykes@geos.tamu.edu.
3. Fax to 979-845-0056 with Attn: Emily Dykes on the cover page.
4. Mail it to: Environmental Programs
Texas A&M University
TAMU 3148
College Station, TX 77843-3148

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Required Memo Template for Internship Final Report

Date:
To: Environmental Programs Office
From: Your name, Major (ENGS or ENST)
Re: Internship during (semester) at (name of firm, agency, or organization)

Executive Summary (~250 words)

1. Describe firm, organization, or agency. (~500 words)
2. Responsibilities (~500 words)
3. Reflection (~500 words)
4. Other observations (~250 words)

Annex (include photographs or other illustrative materials, as appropriate)
Environmental Consulting 10% (7)

**Company:** Austin – EcoNetwork (1)
**Company Description:** The Austin is a network of people interested in information, events, and resources related to Austin and the environment. AEN is known as an effective way to drive turn-out at events, drum up volunteers, find quality employees for green jobs, mobilize people to contact elected officials, boost enrollment at educational seminars and help people make conscious purchasing choices.
**Internship position & description:** Intern – Database development and information management for eco-centered network startup business
**Website:** [http://www.austineconetwork.com](http://www.austineconetwork.com)

**Company:** CSC Engineering & Environmental (1)
**Company Description:** The mission of CSC, Inc. is to protect the health and safety of people and the environment through the use of innovative and sustainable measures, and to provide economically viable solutions using the best environmental consulting practices.
**Internship position & description:** Environmental Tech – environmental surveys; soil sampling; pull permits for crossing wetlands, river crossings, hydrostatic testing, buy/discharge water for hydrostatic testing; research area for archaeological significance; data input/upkeep for Twin Oaks Landfill; assist with remediation plans; generate reports; and mapping
**Website:** [http://www.csceng.com](http://www.csceng.com)

**Company:** Eclipse Environmental & Engineering Inc (1)
**Company Description:** Eclipse Environmental and Engineering Inc. (3E) is a small but diverse firm providing services in the areas of: Environmental Engineering; Civil Engineering; Environmental, Health and Safety Management Consulting; and Remedial Design and Construction.
**Internship position & description:** Environmental engineering internship – research environmental rules and regulation and how they apply to specific location and job sites; assist staff with environmental assessments; assist staff with tasks relating to civil and environmental permitting or design
**Website:** [https://www.facebook.com/pages/Eclipse-Environmental-Engineering/110338669029754](https://www.facebook.com/pages/Eclipse-Environmental-Engineering/110338669029754)

**Company:** Environ (Ramboll Environ) (1)
**Company Description:** A premier global consultancy, Ramboll Environ is trusted by clients to manage their most challenging environmental, health and social issues. We have earned a reputation for technical and scientific excellence, innovation and client service. Our independent science-first approach ensures that our strategic advice is objective and defensible. We apply integrated multidisciplinary services and tailor each solution to our client’s specific needs and challenges.
**Internship position & description:** Summer Intern – conducting environmental assessments of industrial properties, commercial and residential developments, undeveloped properties, and hazardous waste sites; evaluating environmental (soil, ground water, air, etc) sampling results to support environmental fate and transport assessments or to determine the extent and magnitude of contamination for the design of remedial measures; critically reviewing and abstracting regulatory requirements for all areas of environmental compliance;
develop clean up goals for contaminated sites using Federal and state environmental regulations; develop comprehensive site or facility investigations by collecting and analyzing data to characterize chemicals in soil, sediments, surface and ground water, air, and building surfaces; evaluating remediation and environmental control technologies, and developing and implementing plans for site remediation

**Website:** [http://www.ramboll-environ.com](http://www.ramboll-environ.com)

**Company:** HNTB (1)

**Company Description:** HNTB Corporation is an employee-owned infrastructure solutions firm serving public and private owners and contractors. With more than a century of service, HNTB understands the life cycle of infrastructure and addresses clients’ most complex technical, financial and operational challenges. Professionals nationwide deliver a full range of infrastructure-related services, including award-winning planning, design, program management and construction management.

**Internship position & description:** Environmental Planning Intern – prepare public involvement documents to be distributed to the public; provide assistance in conducting environmental analysis for projects; review maps and documents to be sent out the public and client; review and file internal documents; prepare and set up materials for internal meetings and stakeholder meetings.

**Website:** [http://www.hntb.com](http://www.hntb.com)

**Company:** Hydrex Environmental Inc. (1)

**Company Description:** Hydrex Environmental Inc., is a multi-faceted consulting company that provides professional and technical expertise in the conception, design, implementation, and management of environmental projects. Hydrex has demonstrated broad capabilities in geology, hydrogeology, geochemistry, and environmental science. Expertise has been developed in projects associated with environmental compliance, industrial and municipal solid waste management, property development, and natural resource management. Hydrex has skills, capability, and experience to effectively interface with various state and federal regulatory agencies.

**Internship position & description:** Environmental Intern - Participated in well installation and development, assisted with removal and plugging wells no longer in use, checked water and methane levels at landfill sites, and reviewed wetland reports

**Website:** [http://www.hdrexenvironmentinc.com](http://www.hdrexenvironmentinc.com)

**Company:** SynergieKomm (1)

**Company Description:** Synergie Komm is a German based environmental consultancy company. SynergieKomm’s primary objective is to help cities become more sustainable by gauging the potential for renewable energies in the region and following the requests of the local governments as well as inhabitants of these cities

**Internship position & description:** Intern – project management in climate protection and renewable energies

**Website:** [http://www.synergiekomm.info](http://www.synergiekomm.info)
Natural Resources 19% (13)

Company: B&B Lab/TDI-Brooks International (1)
Company Description: B&B Laboratories is the analytical laboratory affiliate of TDI-Brooks International. TDI-Brooks International Inc., a private held Texas corporation, provides scientific services on a global basis with a focus on petroleum geochemistry, surface geochemical exploration, oil spill response, oceanographic surveys, environmental chemistry, and multi-disciplinary environmental assessments.
Internship position & description: Laboratory Tech – sediment coring in the Red Sea and sediment sample geochemical processing towards determining whether migrating fluids are petroleum hydrocarbons.
Website: http://www.tdi-bi.com/index.htm

Company: Calpine (1)
Company Description: Calpine Corporation is America’s largest generator of electricity from natural gas and geothermal resources. Specialized in developing, constructing, owning and operating natural gas-fired and renewable geothermal power plants that use advanced technologies to generate power in a low-carbon and environmentally responsible manner.
Internship position & description: EHS Intern – provide technical assistance on company-wide EHS projects and analysis; support corporate and regional EHS initiatives; provide technical assistance with the development of EHS standards and procedures as required; provide technical support as required for plant EHS organizations; provide analysis of EHS regulations and make evaluations regarding their impact to the company; collect, compile and analyze plant EHS data to support corporate and regional analyses and reporting requirements; support regional and corporate EHS audit program
Website: http://www.calpine.com

Company: Clean Harbors Apollo Onsite Services (1)
Company Description: Clean Harbors Apollo Onsite Services is an environmental services outsourcing program that places select experienced employees at customer locations to support in managing environmental responsibilities. From the collection and packaging of waste materials, management of satellite accumulation areas, to complete in-plant cleaning or running customers RCRA treatment processes, we provide a comprehensive program to meet their needs.
Internship position & description: Assistant Project Manager – manages and oversees small to midsize, technically complex projects involving waste site clean up and construction, building and equipment decontamination and prepare demolition proposals.
Website: http://www.cleanharbors.com

Company: Fluor Federal Petroleum Operations (2)
Company Description: Fluor Federal Petroleum Operations (FFPO) is a special-purpose company formed for the sole purpose of managing and operating the Strategic Petroleum Reserve (SPR) under a prime contract with the U.S. Department of Energy (DOE). The DOE established the SPR in 1975 to reduce the adverse impact of a major interruption of petroleum supply to the United States and carry out our nation's obligation under the International Energy program. In addition to the four storage sites, the SPR operates a

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Project Management Office in New Orleans, Louisiana and an equipment storage facility in Stennis, Mississippi.

**Internship positions & descriptions:** Mickey Leland Energy Fellowship (2 students received this fellowship) – determine current waste management practices; research information concerning Zero Waste Programs; evaluate current site practices and provide information that will enhance and if possible provide direction towards a Zero Waste Program at Bryan Mound

**Website:** [http://www.fluorfpo.com](http://www.fluorfpo.com)

**Company:** Gulf Copper Dry-dock & Rig Repair (1)

**Company Description:** Founded in 1948, Gulf Copper & Manufacturing Corporation, an employee-owned company, repairs and refurbishes marine vessels and offshore rigs and fabricates ancillary components. The company operates strategically located shipyards, drydocks and fabrication facilities along the U.S. Gulf Coast with additional facilities in San Diego, Corpus Christi and Guam. Gulf Copper serves the oil and gas, marine transportation, refining, petrochemical markets in addition to the United States government.

**Internship position & description:** Environmental Technician - Environmental reporting to TCEQ, data collection and hazardous material management

**Website:** [http://www.gulfcopper.com](http://www.gulfcopper.com)

**Company:** National Oilwell Varco (1)

**Company Description:** NOV Rig Systems makes and supports the world’s most advanced drilling solutions. At NOV Rig Systems, we are harnessing the strength of knowledge and innovation that is revolutionizing the future of energy. We build on what works, using our deep expertise to help minimize risk, increase uptime and improve performance in drilling operations around the globe.

**Internship position & description:** NOV Corporate Environmental Risk Internship – manage and complete a range of environmental projects such as liability audits, remediation and site screenings, in addition to assisting on other environmental projects

**Website:** [https://www.nov.com](https://www.nov.com)

**Company:** Philips 66 (1)

**Company Description:** Phillips 66 is a diversified energy manufacturing and logistics company. With a portfolio of Midstream, Chemicals, Refining, and Marketing and Specialties businesses, the company processes, transports, stores and markets fuels and products globally.

**Internship position & description:** Environmental Intern – review and analyze environmental regulatory requirements for a project or portion of the operation, technical calculations, estimations and database management, preparation of applications for regulatory approvals or reports, and development of programs, plans and proposals.

**Website:** [http://www.phillips66.com/EN/Pages/index.aspx](http://www.phillips66.com/EN/Pages/index.aspx)

**Company:** Schumacher Company (1)

**Company Description:** Schumacher Company is in the metal finishing industry (NCAIS: 332813 Plating & Polishing).

**Internship position & description:** Environmental Assistant – environmental compliance form but not limited to, RCRA, TPDES, NESHAP’s

**Website:** [http://www.schumachercoinc.com/s-profile.htm](http://www.schumachercoinc.com/s-profile.htm)
Company: Southwest Conservation Corp (1)
Company Description: Southwest Conservation Corps (SCC) operates conservation service programs across Southern Colorado and Northern New Mexico that empower individuals to positively impact their lives, their communities and the environment. SCC has offices in Durango and Salida, CO and Acoma, NM. SCC has broad program offerings including individual intern placements in natural resource positions as well as crew based conservation service programs for youth (ages 16-18), young adults, (16-25) and post 9-11 era Veterans. SCC programs are rooted in the communities where we serve, addressing local public land issues and working to meet local community needs and interests.
Internship position & description: Corps Member – building trails in the Southwest region of the U.S. using hand tools
Website: http://sccorps.org

Company: Strike, LLC (1)
Company Description: Strike is a leading North American provider of pipeline, facilities, fabrication, maintenance and integrity services to world renowned companies, delivering America’s energy safely. Strike’s integrated network of energy services ranges from upstream production, processing and gathering facilities to high-pressure transmission and distribution lines.
Internship position & description: Environmental Intern (EHS) – Assist in the daily activities within the EHS department to assure compliance with applicable policy and regulations
Website: http://www.strikeusa.com/Pages/default.aspx

Company: Uranium Energy Corporation (1)
Company Description: U.S.-based uranium mining and exploration company.
Internship position & description: Environmental Technician (part of Radiation Safety and Environmental Health Safety team) – assist in implementing, updating and maintaining appropriate programs necessary to assure compliance with all federal, state and local administrative laws and regulations concerning radiation protection, performing radiation surveys, filling out shipping manifests and other transportation documentation
Website: http://www.uraniumenergy.com

Company: Williams Gas Pipeline Co. (1)
Company Description: Williams, including its assets held through Williams Partners L.P., is an energy infrastructure company focused on connecting North America’s significant hydrocarbon resource plays to growing markets for natural gas, natural gas liquids (NGLs) and olefins. Williams’ operations span from the deepwater Gulf of Mexico to the Canadian oil sands. Williams owns and operates midstream gathering and processing assets, and interstate natural gas pipelines. In addition, Williams processes oil sands off-gas and produces olefins for petrochemical feedstocks.
Internship position & description: Intern – Perform environmental activities necessary to obtain required federal, state, and local environmental permits and assist with compliance during and after construction. Duties include conducting environmental field surveys for wetlands and listed species, preparing and submitting permit applications associated with pipeline activities, coordinating approvals with various regulatory agencies, assisting with
construction compliance and managing the completion of post construction permit requirements. The position also requires managing contractors and project budgets. These activities are required for both pipeline expansion and operations and maintenance activities for existing pipeline facilities.
Website: [http://co.williams.com](http://co.williams.com)

**Government 30% (21)**

**Company:** City of College Station (4)

**Company Description:** Local government run programs and utilities for College Station, TX.

**Internship positions & descriptions:**
- GIS Intern – perform a variety of office and field duties associated with the use of GIS for map production and spatial data development and maintenance
- Recycling Intern – provide environmental planning & education regarding solid waste management, collect recyclables, assist with planning and implementing city environmental events
- Water Services Department Intern – collecting bacteriological samples from drinking water system, performing water quality flushing, participating in customer service calls, work in wastewater laboratory collecting samples and conducting routine tests.

Website: [http://www.cstx.gov](http://www.cstx.gov)

**Company:** Ellen Trout Zoo, Lufkin (1)

**Company Description:** The Ellen Trout Zoo is the first AZA (Association of Zoos and Aquariums) accredited zoo in Texas. It participates in the Species Survival Plan (SSP), a program in which zoos work cooperatively to carefully manage a species population. The Ellen Trout Zoo participates in several SSP’s including the tigers, rhinos, Bali mynahs, cotton-top tamarins, and others.

**Internship position & description:** Zookeeper Intern – assist in the preparation of diets and feeding the zoo animals and maintaining drinking water receptacles; cleans, disinfects & maintains enclosures; write reports & keep records on animals; learn different forms of capture techniques, restraint & transport of animals; participate in Zookeeper training classes.


**Company:** Los Angeles Metropolitan Transportation Authority (1)

**Company Description:** Los Angeles County Metropolitan Transportation Authority (Metro) is unique among the nation’s transportation agencies. It serves as transportation planner and coordinator, designer, builder and operator for one of the country’s largest, most populous counties.

**Internship position & description:** Environmental Administration Intern – assist in the development and review of research data; summarize empirical information related to energy audits; develop spreadsheets for an in-depth analysis of environmental data; conduct research on emerging green and sustainable technologies to reduce agency carbon footprint; coordinate with other agency staff in the execution of current sustainability and environmental initiatives; write summary memos and simple reports

Website: [http://www.metro.net](http://www.metro.net)
**Company:** National Marine Fisheries Service (1)

**Company Description:** NOAA Fisheries is responsible for the stewardship of the nation's ocean resources and their habitat. We provide vital services for the nation: productive and sustainable fisheries, safe sources of seafood, the recovery and conservation of protected resources, and healthy ecosystems—all backed by sound science and an ecosystem-based approach to management.

**Internship position & description:** Research Intern – conduct stock assessment of fish stock of critical importance along the U.S. Atlantic coast and write up report on findings

**Website:** [http://www.nmfs.noaa.gov](http://www.nmfs.noaa.gov)

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**Company:** Peace Corps (1)

**Company Description:** As the preeminent international service organization of the United States, the Peace Corps sends Americans abroad to tackle the most pressing needs of people around the world. Peace Corps Volunteers work at the grassroots level toward sustainable change that lives on long after their service—at the same time becoming global citizens and serving their country. When they return home, Volunteers bring their knowledge and experiences—and a global outlook—that enriches the lives of those around them.

**Internship position & description:** Green Strategy Intern – Assist with Green Strategy Committee and implementation of Peace Corp Sustainability Plan; develop methods to collect data for targeted greenhouse gas reductions; researching how environmental policies, procedures and systems will affect the operation of Peace Corps; assisting with development of promotional and educational activities to promote environmental awareness of Peace Corps staff on environmental issues

**Website:** [http://www.peacecorps.gov](http://www.peacecorps.gov)

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**Company:** Piedmont National Wildlife Refuge (1)

**Company Description:** Is a government organization under the U.S. Fish & Wildlife Service that manages and maintains the Piedmont National Wildlife Refuge in central Georgia.

**Internship position & description:** Forestry Technician – forest inventory and mapping; invasive exotic plant control; red cockaded woodpecker, quail, fire effects and other monitoring; forestry activities such as marking timber; maintenance and other duties

**Website:** [http://www.fws.gov/piedmont/](http://www.fws.gov/piedmont/)

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**Company:** San Antonio Water System (1)

**Company Description:** SAWS is a public utility owned by the City of San Antonio. It was created in May 1992 through the consolidation of its three predecessor agencies: City Water Board – the previous city-owned water supply utility; City Wastewater Department – the city government department responsible for sewage collection and treatment; Alamo Water Conservation and Reuse District – an independent city agency created to develop a system for reuse of treated wastewater.

**Internship position & description:** Intern-Master Plan – analysis of population, land use and consumption data; analysis with database, GIS, excel programs; document process and findings; presenting information

**Website:** [http://www.saws.org](http://www.saws.org)
Company: The Texas Commission on Environmental Quality TCEQ (6)

Company Description: The Texas Commission on Environmental Quality strives to protect our state's public health and natural resources consistent with sustainable economic development. Our goal is clean air, clean water, and the safe management of waste.

Internship positions & descriptions: Intern-Assistant Network Coordinator - provide general support with air monitoring programs and assisting with the reorganization of the Air Laboratory and Laboratory Accreditation file rooms within the Monitoring Division. Engineering Technician 3 – Evaluate existing Class V injection well authorizations used for groundwater remediation to determine the current status of the authorization and accuracy of information; review existing authorizations for Aquifer Storage and Recovery (ASR) injection well authorizations in Texas and identify additional data elements that should be included in future ASR authorization applications; using ArcGIS, update location maps of various classes of injection wells and aquifer exemptions in Texas, and possibly develop new map layers. Engineering Technician 1 – Review outdoor burning permits, aid with filing, accompany complaint investigations (air quality & odors), relative accuracy report reviews for continuous emissions monitoring and predictive emissions monitoring. Engineering Technician 1 – basic and routine work in the fields of air and water pollution, solid waste disposal, public water supply, and other environmental areas; minimal administrative and secretarial duties. Engineering Technician 1 – NPS Best management, practice database development, spatial analysis, water quality data analysis, technical writing, file management, data entry, learn about the program. Aquatic Biologist – assist with surface water quality management program with data collection and recording (through Mickey Leland Environmental Internship Program); Engineering Technician, Intern-Assistant Network Coordinator

Website: http://www.tceq.state.tx.us

Company: Texas Parks & Wildlife Department (1)

Company Description: Welcome to Texas Parks and Wildlife Department Web site, your online connection to some of the finest outdoor recreation in the world, including hunting, fishing, camping, hiking, biking, birdwatching and much more. You will also find the latest on TPWD's efforts to conserve fish and wildlife species and habitat as well as cultural and historic sites across Texas, with many opportunities for you to get involved with this important work.

Internship position & description: Fish and Wildlife Tech – assists ecosystem leader in the collection, recording, and editing of fishery-dependent and independent data on the Corpus Christi Bay ecosystem.

Website: https://tpwd.texas.gov

Company: Texas Senate (Sen. Deuell) (1)

Company Description: Government Agency

Internship position & description: Staff Assistant (Public policy internship program: http://ppip.tamu.edu) – assisting senator and staff with clerical and legislative duties: enter and update constituent correspondence data; obtain information from legislative and executive agencies as needed; answer and direct phone calls.
Website: http://www.senate.state.tx.us

Company: U.S. Army Corps of Engineers (1)
Company Description: Provides engineering services to customers in more than 130 countries worldwide with environmental sustainability as a guiding principle. Activities include dredging waterways, promoting stability through improving quality of life, devising hurricane and storm damage reduction infrastructure and environment restoration.
Internship position & description: Natural Resource Management Intern – enforcing water safety and preserving archaeological sites
Website: http://www.usace.army.mil

Company: U.S. Fish and Wildlife Service (1)
Company Description: Mission Statement: Assist in the development and application of an environmental stewardship ethic for our society, based on ecological principles, scientific knowledge of fish and wildlife, and a sense of moral responsibility. Guide the conservation, development, and management of the Nation's fish and wildlife resources. Administer a national program to provide the public opportunities to understand, appreciate, and wisely use fish and wildlife resources. These missions are met by: enforcing federal wildlife laws; protecting endangered species; managing migratory birds; restoring nationally significant fisheries; conserving and restoring wildlife habitat such as wetlands; helping foreign governments with their international conservation efforts; and Distributing hundreds of millions of dollars, through our Wildlife Sport Fish and Restoration program, in excise taxes on fishing and hunting equipment to State fish and wildlife agencies.
Internship position & description: Biol. Aid/Tech – Assist with habitat management activities through routine surveys, censuses, collecting and reporting on habitat conditions, assist in banding waterfowl and other wildlife species, assisting with public relations and maintenance work.
Website: http://www.fws.gov

Company: The Woodlands Township (1)
Company Description: Local government for the Woodlands Township
Internship position & description: Mosquito Surveillance Intern – assist with the South Montgomery County Integrated Mosquito Management team by conduction mosquito surveillance (trapping) and premises surveys (identification and elimination of mosquito breeding and resting sites), record keeping and inputting, mapping and interpreting data, learn about the public health issues associated with vector-borne diseases as well as effective prevention, public education and control measures.
Website: http://www.thewoodlandstownship-tx.gov

Non-Profit or Education 32% (22)
Company: Hermann Park Conservancy (1)
Company Description: Founded in 1992 as Friends of Hermann Park, Hermann Park Conservancy is a nonprofit citizens’ organization dedicated to the stewardship and improvement of Hermann Park – today and for generations to come.
Internship position & description: Reforestation Planning and Volunteer - assist Hermann Park Conservancy’s (HPC) Conservation Director with aspects of the continuing development of a reforestation plan in Hermann Park. The intern will be responsible for supplementing, updating and expanding HPC’s park tree inventory and database utilizing GPS equipment, including such information as species, size, condition and maintenance needs of each tree. This inventory is essential as the basis for the Conservation Director’s development of a long-term comprehensive tree management plan for Hermann Park. The intern will continue the development of a dynamic map of tree locations and planting spaces in Hermann Park using GIS Arcview 10 software. The intern will edit the existing tree database and map to reflect the tree plantings and tree losses that occurred throughout the year to date. The maps are fluid documents, continually requiring updating due to tree removals and plantings, Park furnishing installations and capital improvements.
Website: [http://www.hermannpark.org](http://www.hermannpark.org)

Company: Houston Advanced Research Center (HARC) (1)
Company Description: HARC engages in projects that help people thrive and nature flourish. Our expertise is focused on the science and engineering needed to understand and address issues related to air quality, clean energy, and water quality and supply.
Internship position & description: Research Intern - Assist researchers by collecting, managing, analyzing, and evaluating data for use in funded projects; quality-assures and synthesizes data and information for project reports, scientific publications, presentation to stakeholders and funders, or research products; conducts statistical or graphical analysis to detect trends in environmental and social data related to: ground water and surface water quality and quantity, water supply potential, water use, and habitat changes in wetlands, flood plains or coastal and riparian ecosystems; conducts field oversight of contractors to assure compliance with project requirements; assists researchers with organizing and planning and participating in renewable energy stakeholder groups; reviews and fact-checks manuscripts, reports and proposals; complies reads, summarizes, and organizes written project stakeholders as directed; assists researchers with papers and proposals for submission to funding sources.
Website: [http://www.harc.edu](http://www.harc.edu)

Company: Howdy Farm (1)
Company Description: The Howdy Farm began in 2009 and in the years since has become a vibrant, thriving enterprise garnering support from all over. We have grown our operations to two gardens and a planting field. Farmers, interns, and volunteers work together in the fields, on projects, and various other techniques in order to produce crops sustainably.
Internship position & description: Intern - gain hands-on experience in small-scale sustainable vegetable and fruit production; experience a wide range of responsibilities and focus on a unique capstone project; gain on-the-job experience such as planting, harvesting, watering, weeding, and fertilizing.
Website: [http://tamuhowdyfarm.weebly.com](http://tamuhowdyfarm.weebly.com)

Company: Keep Houston Beautiful (1)
Company Description: Keep Houston Beautiful is the city's leading organization in beautification, litter reduction and recycling education. For over 30 years, Keep Houston Beautiful has been reaching out to all segments of our community to educate and empower...
individuals to take greater responsibility for beautifying and enhancing Houston's environment. Each year's successes have created a cleaner and healthier city for all Houstonians.

**Internship position & description:** SCA Intern – Assist with EPA MS4 Conference (solicitation of event sponsorships, event logistics, event publicity, communication with local vendors, development of training & outreach materials for local coordinators, tracking & filling supply orders); assist in processing Adopt a Block and Adopt an Esplanade applications; updates & maintenance of website; help organize Weekend Cleanups

**Website:** [http://www.houstonbeautiful.org](http://www.houstonbeautiful.org)

**Company:** Solar Living Institute (1)

**Company Description:** The Solar Living Institute (SLI) is a 501c3 non-profit institution with a national reputation for solar training and sustainable living education. The mission of the SLI is to promote sustainable living through inspirational environmental education.

**Internship position & description:** Event Intern – coordinate events and fund-raisers as well as sustainable living demonstrations

**Website:** [https://www.solarliving.org](https://www.solarliving.org)

**Company:** Texas A&M Office of Sustainability (8)

**Company Description:** Our mission is to educate the campus and local community about the importance of sustainability. We will accomplish this by promoting sustainable practices both on and off campus in academic and non-academic settings, providing resources and support for people who wish to incorporate sustainable practices into their work and life, and advocating for sustainable programs and initiatives.

**Internship position & description:** Sustainability Outreach Specialist – promote the Sustainability Pledge and Sustainability Cam at various campus events such as Campus Sustainability Day and the MSC Open House; create a culture of sustainability, aid in the deployment of various student and campus engagement platforms; assist with the implementation and tracking of the Sustainable Office Certification program, development of a Sustainable Event Certification program, and Sustainability 101 education classes; communicate and educate all parts of campus and broader community on issues of sustainability; work with divisions and departments of campus to help achieve sustainability goals without compromising educational goals or student learning

**Sustainability Intern** – Increase the sustainability of practices such as recycling, energy and water use, transportation, food services, construction and built environment, and purchasing through the development of community outreach programs. Work with campus stakeholders to create a culture of sustainability at Texas A&M University.

**Website:** [http://sustainability.tamu.edu](http://sustainability.tamu.edu)

**Company:** Texas A&M University Research Lab (1)

**Company Description:** Support in the TAMU Texas Cancer Registry (TCR) Geocoding Correction project

**Internship position & description:** Undergrad Research Assistant – manually process data records to improve the accuracy of the geocoded location associated with specific records and contribute to project reports.

**Website:** N/A

**Company:** Trees for Houston (1)
**Company Description:** Trees For Houston is a non-profit organization whose simple yet focused mission is to plant, protect, and promote trees throughout the greater Houston area. Established in 1983, Trees For Houston’s efforts initially centered on planting street trees in the heart of Houston, Texas. As the city grew, so did the need for strategic, large scale planting to counteract the often unfortunate impact of expansion on the region's tree canopy. Since our inception, with over 500,000 trees planted, our organization has evolved into one that grows, plants, and maintains tens of thousands of trees across the greater Houston area annually.

**Internship position & description:** Conservation Logistics Intern – scout and develop plans for next season’s plantings and restoration projects; tree farm maintenance; record analysis; shadowing executive director; elementary education outreach

**Website:** [http://www.treesforhouston.org](http://www.treesforhouston.org)

**Company:** Tsinghua/MIT (China Energy and Climate Project) (1)

**Company Description:** The CECP is an alliance between the MIT Joint Program on the Science and Policy of Global Change and the Institute for Energy, Environment and Economy at Tsinghua University in Beijing, China. At MIT, the CECP is associated with and supported by the MIT Energy Initiative. The goal of the CECP is to analyze the impact of existing and proposed energy and climate policies in China on technology, energy use, the environment and economic welfare by applying — and, where necessary, developing — both quantitative and qualitative analysis tools.

**Internship position & description:** Research Assistant – assist with the development of a Chinese version of the China Energy and Climate Project website; research news summaries relating to current energy and environmental issues in China; conduct preliminary research on potential natural gas demand and environmental impact of shale gas development in China

**Website:** [http://globalchange.mit.edu/CECP/](http://globalchange.mit.edu/CECP/)

**Company:** Southern Environmental Assc. (4)

**Company Description:** Southern Environmental Association (SEA) is a non-governmental organization, created in 2008 when two longstanding conservation organizations, Friends of Nature (FoN) and the Toledo Association for Sustainable Tourism and Empowerment (TASTE) merged to ensure improved community involvement in the conservation and co-management of the natural resources in Southern Belize.

SEA’s mission as a Belizean non-governmental organization is to continuously work towards improving stewardship and the environmental integrity of key marine areas in southern Belize through effective, collaborative protected areas management, community involvement, and strategic partnerships for the benefit of all stakeholders.

The Southern Environmental Association co-manages three important marine protected areas in Southern Belize: Gladden Spit and Silk Cayes Marine Reserve (GSSCMR), the Sapodilla Cayes Marine Reserve and the Laughing Bird Caye National Park (LBCNP). Both Laughing Bird Caye National Park and Sapodilla Cayes Marine Reserve form a part of the Belize Barrier Reef Reserve System declared by UNESCO in 1996 as a world heritage site.

**Internship positions & descriptions:** Protected Areas Assistant – input data relating to Special Unit Enforcement *Daily Encounters* and *Daily Visitations* for LBCNP and GSSCMR and produce summary report; assist with data collection for Whale Shark monitoring and analyze subsequent data; develop blueprints of the islands; identify and assist with infrastructure improvements.
Assistant Marine Researcher – analyze lionfish feeding behavior and stomach content in southern Belize and analyze of potential market for lionfish meat
Website: http://seabelize.org

Company: Student PIRGs (Public Interest Research Groups) (1)
Company Description: Student PIRGs are independent statewide student organizations that work on issues like environmental protection, consumer protection, and hunger and homelessness. For nearly 40 years students working with their campus PIRG chapters have been making a real difference in people's lives and winning concrete changes to build a better world.
Internship position & description: Sustainable U Coordinator – Organize a sustainability campaign to educate the community and implement solutions
Website: http://www.studentpirgs.org

Company: Vermont Epscor CWDD (1)
Company Description: The Experimental Program to Stimulate Competitive Research (EPSCoR) is a program designed to fulfill the National Science Foundation's (NSF) mandate to promote scientific progress nationwide. The EPSCoR program is directed at those jurisdictions that have historically received lesser amounts of NSF Research and Development (R&D) funding. Twenty-eight states, the Commonwealth of Puerto Rico, the U. S. Virgin Islands and Guam are currently eligible to participate. Through this program, NSF establishes partnerships with government, higher education and industry that are designed to effect lasting improvements in a state's or region's research infrastructure, R&D capacity and hence, its national R&D competitiveness.
Internship positions & descriptions: Undergraduate Intern - review, describe, and analyze regulations and regulatory enforcement decisions to identify patterns in identifying regulatory violations to prosecute and in the decisions made.
Website: http://epscor.w3.uvm.edu/2/

Services, Information, and Media 9% (6)
Company: About.com (1)
Company Description: Website geared towards providing answers and content on a variety of topics such as interior decorating, travel, health, food, style and technology written by experts in the fields.
Internship position & description: Geography Intern – contributing writer for topics relating to Geography, expected to write 1-2 monthly articles
Website: http://www.about.com

Company: Flanigan Law Firm (1)
Company Description: Law firm specializing in criminal defense, servicing the Brazos Valley.
Internship position & description: Legal Assistant – answer the phone, take messages; set appointments for meetings and court appointments; file and prepare legal documents; prepare letters/faxes; run messages to courthouse or other law offices; post and retrieve mail; assist with jury picking and note taking during trials.
Website: http://www.flaniganlawfirm.com/Pages/default.aspx
**Company**: Harry James Building and Design (1)
**Company Description**: Harry James Building & Design is a "quality conscious" company that is well versed in numerous styles of design with over 30 years of building experience in all types of home building, including; Contemporary, Craftsman, French Quarter, Mediterranean, Southern Colonial, Traditional and Victorian. We also specialize in the Redesign, Remodeling and Renovations of older homes to accommodate the modern family.
**Internship position & description**: Research and Development – assist in the research and development of system that will integrate “Green” building technologies into the company’s building process.
**Website**: [http://www.harryjamesbuilder.com/default.htm](http://www.harryjamesbuilder.com/default.htm)

**Company**: KBTX (1)
**Company Description**: Local TV News Station
**Internship position & description**: Weather Intern – learning newsroom operations, weather graphics, weather analysis and forecasting, and presenting mock weathercasts
**Website**: [http://www.kbtx.com](http://www.kbtx.com)

**Company**: Starr Companies, Inc/Starr Insurance (2)
**Company Description**: STARR Companies (or STARR) is the worldwide marketing name for the services offered by the operating insurance and travel assistance companies and subsidiaries of STARR International Company, Inc. and for the investment business of C.V. Starr & Co., Inc.
**Internship positions & descriptions**: Environmental Intern – analysis of environmental exposures of various types of companies for insurance purposes.
**Website**: [http://www.starrcompanies.com](http://www.starrcompanies.com)
# GEOS 405 Poster Presentation Judging

Poster Title: ________________________________________________________________

Use these criteria to rate the poster and presentation on a scale of 5 points.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Score</th>
<th>Well Done (5)</th>
<th>Comments and/or Suggestions</th>
<th>Poor (0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization</strong></td>
<td></td>
<td>• Defined sections.</td>
<td>• Clutter, no definitive sections, all over the place.</td>
<td>• Not all sections present.</td>
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<tr>
<td></td>
<td></td>
<td>• Clear headings.</td>
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<td>• Flows nicely to assist reader without help.</td>
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<td>• Finished product.</td>
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<tr>
<td><strong>Creativity</strong></td>
<td></td>
<td>• Interesting, engaging, visually stimulating.</td>
<td>• Bland, no variability, no use of color or diagrams.</td>
<td>• Boring to look at.</td>
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<td></td>
<td></td>
<td>• Aesthetically appealing use of color, diagrams and text</td>
<td>• Interest, motivation, effort and time obviously present</td>
<td>• Interest, motivation effort and time obviously absent.</td>
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<tr>
<td></td>
<td></td>
<td>• Interest, motivation, effort and time obviously present</td>
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<tr>
<td><strong>Science Content and Literacy</strong></td>
<td></td>
<td>• Concept fully and properly explained.</td>
<td>• No analysis of science topic.</td>
<td>• No explanation.</td>
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<td></td>
<td></td>
<td>• Insight present.</td>
<td>• No science specific connection.</td>
<td>• No science specific connection.</td>
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<td></td>
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<td>• Science specific connection made.</td>
<td>• No use of resources.</td>
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<td></td>
<td></td>
<td>• Content is accurate, comprehensive and well supported.</td>
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<tr>
<td><strong>Presentation</strong></td>
<td></td>
<td>• Presenters’ response to questions demonstrates knowledge of subject matter and project.</td>
<td>• Presenters’ response to questions demonstrates superficial/irrelevant knowledge of subject matter and project.</td>
<td>• Overall this was a very poor presentation.</td>
</tr>
<tr>
<td>Writing</td>
<td>Poor</td>
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<td>The writing is clear and concise</td>
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<tr>
<td>Material is not repeated within the text</td>
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<tr>
<td>The writing style is appropriate for a scientific journal</td>
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<tr>
<td>The narrative is clean of errors in spelling, grammar, and syntax</td>
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<tr>
<td>The use of headings and subheadings is appropriate</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>The citation style is consistent within the text and is consistent with that in scientific journals</td>
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<td>2</td>
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<td>The reference style is consistent within the bibliography and is consistent with that in scientific journals</td>
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<td>4</td>
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<tr>
<td>All references are cited and all citations are to included references</td>
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<table>
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<th>Content</th>
<th>Poor</th>
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<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>The length of the report is appropriate for the content</td>
<td>1</td>
<td>2</td>
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<tr>
<td>The Introduction sets the stage with rationale leading to compelling objectives</td>
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<tr>
<td>Concepts emerge as the introduction transitions towards the specific research problem</td>
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<tr>
<td>The information presented is appropriate for analysis</td>
<td>1</td>
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Appendix H-212
<table>
<thead>
<tr>
<th>A testable hypothesis is developed</th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>The hypothesis is tested</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Research findings are used to create new ideas and concepts</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Credit is given to other researchers and to those who assisted with the research</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

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<tr>
<th><strong>Analysis</strong></th>
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<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Calculations are meaningful and done correctly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Assumptions used in the analysis could not have been easily checked</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Data are presented in tables where appropriate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Graphics are properly referenced in the text and have explanatory captions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Graphics are properly referenced in the text and have explanatory captions</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Graphics are well-crafted and easily understood</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Results are clearly presented and properly interpreted</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The importance of the results is assessed</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Conclusions are supported and justified</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Appendix H-213
Appendix I: Study Abroad

**Courses:**
- GEOG 380 - Workshop in Environmental Studies (3 hours)
- GEOG 450 - Field Geography (3 hours)

**Interested in studying abroad?**

The Soltis Center is a dynamic laboratory for the integrated study of climatology, hydrology, biogeography, geomorphology and human-environment interactions. On-site, students will learn about various aspects of the impact of climate and land-use change on the hydrology of the cloud forest. Students will also visit several cities in Costa Rica and be trained in urban land-use mapping, interpretation of cultural landscapes, and interviewing for qualitative and quantitative data collection.

**Want to study in Costa Rica?**

| Estimated Program Fee (subject to change) | $3,450 |
| Lodging & Some Meals | $2,100 |
| Excursions, Tours, & Field Trips | $100 |
| In-Country Transportation | $300 |
| International Health Insurance | $40 |
| SAPO Administrative Fee | $360 |
| Miscellaneous Expenses | $150 |
| Portion of Faculty Expenses | $400 |

**Estimated Additional Expenses—not included in the Program Fee**

| Tuition & Fees (In-state resident for 6 credit hours) | $1,750 |
| International Airfare | $800 |
| Travel Documents | $135 |
| Meals (not included in program fees) | $500 |
| Materials & Supplies | $50 |
| Personal Spending | varies |

**TOTAL ESTIMATED COST**

$6,685

**Eligibility:**

All Study Abroad programs require a minimum 2.0 GPR & good academic standing

- Approval of the professor
- Must attend all program-specific orientations

**Faculty Leaders:**

Dr. Christian Brannstrom
cbrannst@geos.tamu.edu

Dr. Steven Quiring
squiring@geos.tamu.edu

**Study Abroad Advisor:** Sarah Whetsell
swettsell@tamu.edu

On our website, students can find more valuable resources and information:

http://studyabroad.tamu.edu

**Creation & maintenance of this flyer is partially funded by your Student Service Fee.**
Interested in studying abroad?

The Soltis Center is a dynamic laboratory for the integrated study of climatology, hydrology, biogeography, geomorphology and human-environment interactions. On-site, students will learn about various aspects of the impact of climate and land-use change on the hydrology of the cloud forest. Students will also visit several cities throughout Costa Rica and will be trained in urban land-use mapping, interpretation of cultural landscapes, and interviewing for qualitative and quantitative data collection. This program gives students the unique opportunity to explore many core geography concepts in the field and to gain invaluable experience in field methods.

Courses (6 cr total):
- GEOG 380: Workshop in Environmental Studies (3 cr)
- GEOG 450: Field Geography (3 cr)

Costa Rica
Geography & Environment
San Isidro de Peñas Blancas, Costa Rica

June 6 - July 3, 2015

Want to study in Costa Rica?

<table>
<thead>
<tr>
<th>Estimated Program Fee (subject to change)</th>
<th>$3,600</th>
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<tr>
<td>Lodging &amp; Some Meals</td>
<td>$1,600</td>
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<tr>
<td>Excursions &amp; Cultural Site Visits</td>
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<tr>
<td>In-country Transportation</td>
<td>$600</td>
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<tr>
<td>International Health Insurance</td>
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<td>SAPO Administrative Fee</td>
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<td>Miscellaneous Expenses</td>
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<tr>
<td>Portion of Faculty Expenses</td>
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<table>
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<tr>
<th>Estimated Additional Expenses Not included in the Program Fee</th>
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<td>Tuition &amp; Fees (In-state resident for 6 credit hours)</td>
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<td>International Airfare</td>
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<td>Passport &amp; Visa (if needed)</td>
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<td>Meals (not included in program fees)</td>
<td>$600</td>
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<td>Textbooks and Supplies</td>
<td>$0</td>
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<tr>
<td>Personal Spending</td>
<td>Varies</td>
</tr>
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TOTAL ESTIMATED COST | $7,395+

Eligibility:
- 2.0 GPR and good academic standing
- Must meet with and be approved by faculty leaders
- Must attend all program-specific orientations

Faculty Leader: Dr. Christian Brannstrom
cbrannst@geog.tamu.edu

Faculty Leader: Dr. Steven Quiring
squiring@geog.tamu.edu

Study Abroad Advisor: Larry Komrower
lkomrower@tamu.edu | 979.845.0544

Visit our website for more valuable resources and information:
http://studyabroad.tamu.edu

The University Advancement Fee contributes to the production of this brochure.
Appendix J: Scholarships

Endowed Scholarship Agreement

between

Kate Miller

and

The Texas A&M Foundation

The following sets forth the agreement between the Kate Miller and the Texas A&M Foundation ("Foundation") with regard to the (I) Purpose, (II) Schedule and Form of Contributions, (III) Recognition, and (IV) Administration of a gift to the Texas A&M Foundation.

This gift agreement replaces the gift agreement signed on January 22, 2015. Changes were made to the student selection information and the Additional Selection Preferences were removed.

I. Purpose

The Foundation agrees to use this gift to establish the George J. Miller Endowed Scholarship fund in an original amount of $25,000. Distributions from this endowment will be used to provide one or more scholarships to full-time students in good standing pursuing an undergraduate degree in the Environmental Programs in the College of Geosciences from Texas A&M University in College Station, Texas.

In the event the need for funds for this purpose becomes obsolete, inappropriate, or impracticable, then the Board of Trustees of the Texas A&M Foundation will, in consultation with us if we are available or with the President of Texas A&M University in our absence, direct the use of the Fund in the best interest of the University and as close to the original intent as possible. The identity of the Fund will be retained and will always bear the name indicated by the donor.

II. Schedule and Form of Contributions

Kate Miller agrees to fulfill this commitment with gifts of cash, securities, or other assets over a five-year period beginning in December 2014.

In the event this commitment is unfulfilled at the end of the period above, the donor will be contacted to discuss an alternate use or an additional contribution. In the donor’s absence, the Foundation will select an alternate use or combine the gift with other funds for a similar purpose, keeping in mind the donor’s original intent.

Gifts should be made payable to the Texas A&M Foundation. The Texas A&M Foundation is a 501(c)(3) organization under IRS guidelines and is charged with soliciting,
receiving, investing, and disbursing private gifts which benefit the University. Customary fees associated with the acceptance and management of gifts benefiting Texas A&M University will be assessed. Exhibit A to this agreement provides a summary of fees and the endowed fund spending policy.

III. Recognition

In appreciation of this gift, Kate Miller will be recognized in accordance with the standard recognition procedures of the College of Geosciences. The Foundation may recognize this gift by publication of the donor’s name in donor honor rolls as Dr. Kate Miller. This gift will be credited to the Lead by Example campaign.

IV. Administration

The Foundation will establish accounts and make distributions according to policy in support of the purpose designated in Section I. The property comprising this gift may, for investment purposes, be merged with any of the general investments assets of the Texas A&M Foundation. This scholarship will be available for award for the academic year beginning approximately twenty-four months after funding is completed. Donor may elect to provide an additional gift to initiate the scholarship at an earlier date.

All recipients will be selected by a committee of faculty and/or staff of Texas A&M University in accordance with University policy on the basis of academic achievement, extra-curricular activities and financial need. The recipient must be a full-time undergraduate student pursuing a degree in Environmental Studies or Environmental Geosciences in the College of Geosciences.

Kate Miller requests that the College of Geosciences notify her father, Mr. George J. Miller, each time the scholarship is awarded including the name and background of the recipient. See Father’s contact information below.

Kate Miller requests that the College of Geosciences provided each recipient of the scholarship with a brief biography of George J. Miller. Ms. Miller has provided this biography to the College.
4/15/15
Date

Katie C. Miller
Dr. Kate Miller
Texas A&M Foundation

4/17/2015
Date

James J. Palinscar
Senior Vice President for Development

cc: Dr. Kate Miller, Dean
Dr. Christian Brannstrom, Program Director

JWF

Rev. 07/15/2011

Appendix J-219
EXHIBIT A  

Summary of Fees and Endowment Fund Spending

The Texas A&M Foundation is a non-profit corporation legally separate from Texas A&M University. Its budget is primarily supported by fees described below. It is not funded by the University or the State of Texas.

Management Fee

Texas A&M Foundation annually allocates a total of 1.00 percent (as of the date of this Exhibit) of the Foundation’s Long-term Investment Pool (LTIP) market value to support the operations of the Foundation.

Gift Fee

As approved by the Texas A&M System Board of Regents in 1989, a one-time fee of 5.0 percent is assessed on all gifts to Texas A&M University and Texas A&M Foundation. The gift fee on endowed gifts is collected from the first earnings on the endowed gift and does not reduce the endowment principal. This means the endowment earnings are available to support the purpose of the endowed fund in approximately 18 months. Non-endowed scholarships are exempt from the fee.

Endowment Fund Spending

The Texas A&M Foundation spending policy allocates a fixed percentage of an average market value to the spending account from which distributions are made for the purpose of the endowment gift account. The Foundation formula uses the market value average over a 5 year period to smooth out short-term fluctuations and then allocates 4.2 percent (as of the date of this Exhibit) of that amount as income available to spend.

Endowed gifts received by the Foundation are pooled for investment much like a mutual fund investment. The distribution rate is established on an annual basis.

The Foundation’s Board of Trustees may change the management fee policy and/or the spending policy from time to time to protect the intergenerational equity of the endowment.
Endowed Scholarship Agreement

between

Ms. Michelle Jeffrey
Mr. Chess Mizell

and

The Texas A&M Foundation

The following sets forth the agreement between the Ms. Michelle Jeffrey and Mr. Chess Mizell and the Texas A&M Foundation ("Foundation") with regard to the (I) Purpose, (II) Schedule and Form of Contributions, (III) Recognition, and (IV) Administration of a gift to the Texas A&M Foundation.

I. Purpose

The Foundation agrees to use this gift to establish the Chess R. Mizell '14 Memorial Scholarship fund in an original amount of $25,000. Distributions from this endowment will be used to provide one or more scholarships to full-time junior and senior students in good standing pursuing an undergraduate degree in the Environmental Programs in the College of Geosciences from Texas A&M University in College Station, Texas.

In the event the need for funds for this purpose becomes obsolete, inappropriate, or impracticable, then the Board of Trustees of the Texas A&M Foundation will, in consultation with us if we are available or with the President of Texas A&M University in our absence, direct the use of the Fund in the best interest of the University and as close to the original intent as possible. The identity of the Fund will be retained and will always bear the name indicated by the donor.

II. Schedule and Form of Contributions

Ms. Michelle Jeffrey and Mr. Chess Mizell agree to fulfill this commitment with gifts of cash, securities, or other assets over a five-year period beginning in May 2013.

In the event this commitment is unfulfilled at the end of the period above, the donor will be contacted to discuss an alternate use or an additional contribution. In the donor's absence, the Foundation will select an alternate use or combine the gift with other funds for a similar purpose, keeping in mind the donor's original intent.

Gifts should be made payable to the Texas A&M Foundation. The Texas A&M Foundation is a 501(c)(3) organization under IRS guidelines and is charged with soliciting, receiving, investing, and disbursing private gifts which benefit the University. Customary
fees associated with the acceptance and management of gifts benefiting Texas A&M University will be assessed. Exhibit A to this agreement provides a summary of fees and the endowed fund spending policy.

III. Recognition

In appreciation of this gift, Ms. Michelle Jeffrey and Mr. Chess Mizell will be recognized in accordance with the standard recognition procedures of the College of Geosciences. The Foundation may not recognize this gift by publication of the donors’ name in donor honor rolls as Ms. Michelle Jeffrey and Mr. Chess Mizell.

IV. Administration

The Foundation will establish accounts and make distributions according to policy in support of the purpose designated in Section I. The property comprising this gift may, for investment purposes, be merged with any of the general investment assets of the Texas A&M Foundation. This scholarship will be available for award for the academic year beginning approximately eighteen months after funding is completed. Donors may elect to provide an additional gift to initiate the scholarship at an earlier date.

All recipients will be selected by a committee of faculty and/or staff of Texas A&M University in accordance with University policy on the basis of academic achievement, extra-curricular activities and financial need. The recipient must be a junior or senior student pursuing an undergraduate degree in Environmental Studies in the College of Geosciences. Preference for students who have documented an interested in climate change.

Ms. Michelle Jeffrey and Mr. Chess Mizell requests that the College of Geosciences notify them each time the scholarship is awarded including the name and background of the recipient.

7/10/13
Date

Ms. Michelle Jeffrey

7/10/13
Date

Mr. Chess Mizell
7/17/2013

cc: Dr. Kate Miller, Dean
    Dr. Don Collins, Program Director

JWF

Rev. 07/15/2011

Texas A&M Foundation

James J. Palmitser
Senior Vice President for Development

Appendix J-223
EXHIBIT A

Effective: July 17, 2012

Summary of Fees and Endowment Fund Spending

The Texas A&M Foundation is a non-profit corporation legally separate from Texas A&M University. Its budget is primarily supported by fees described below. It is not funded by the University or the State of Texas.

Management Fee

Texas A&M Foundation annually allocates a total of 0.88 percent (as of the date of this Exhibit) of the Foundation’s Long-term Investment Pool (LTIP) market value to support the operations of the Foundation.

Gift Fee

As approved by the Texas A&M System Board of Regents in 1989, a one-time fee of 5.0 percent is assessed on all gifts to Texas A&M University and Texas A&M Foundation. The gift fee on endowed gifts is collected from the first earnings on the endowed gift and does not reduce the endowment principal. This means the endowment earnings are available to support the purpose of the endowed fund in approximately 18 months. Non-endowed scholarships are exempt from the fee.

Endowment Fund Spending

The Texas A&M Foundation spending policy allocates a fixed percentage of an average market value to the spending account from which distributions are made for the purpose of the endowment gift account. The Foundation formula uses the market value average over a 5 year period to smooth out short-term fluctuations and then allocates 4.4 percent (as of the date of this Exhibit) of that amount as income available to spend.

Endowed gifts received by the Foundation are pooled for investment much like a mutual fund investment. The distribution rate is established on an annual basis.

The Foundation’s Board of Trustees may change the management fee policy and/or the spending policy from time to time to protect the intergenerational equity of the endowment.
Robert S. Bednarz  
Professor  
Department of Geography Texas A&M University College Station, Texas 77843-3147  
bednarz@tamu.edu

**A. PROFESSIONAL PREPARATION**

<table>
<thead>
<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<tbody>
<tr>
<td>Dartmouth College</td>
<td>Geography</td>
<td>A.B.,with Distinction 1968</td>
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<td>Northwestern University</td>
<td>Geography</td>
<td>M.A.,1969</td>
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<td>University of Chicago</td>
<td>Geography</td>
<td>Ph.D., 1975</td>
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**B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS**

- Professor, Department of Geography, Texas A&M University, 1995-present
- Speaker-elect, Faculty Senate, Texas A&M University, 2008-2009.
- Speaker, Faculty Senate, Texas A&M University, 2009-2010

**C. RECENT PUBLICATIONS**


Hernandez, pp. (Reprint with additional material by R. S. Bednarz)

D. COURSES TAUGHT RELEVANT TO ENGS OR ENST
GEOG 304 Economic Geography Spring 2010
GEOG 306 Intro to Urban Geography Spring 2011
GEOG 406 Geographic Urban Issues Spring 2011
GEOG 306 Intro to Urban Geography Fall 2011
GEOG 404 Spatial Thinking Fall 2011
GEOG 304 Economic Geography Spring 2012
GEOG 406 Geographic Urban Issues Spring 2012
GEOG 306 Intro to Urban Geography Fall 2012
GEOG 404 Spatial Thinking Fall 2012
GEOG 306 Intro to Urban Geography Spring 2013
GEOG 406 Geographic Urban Issues Spring 2013
GEOG 306 Intro to Urban Geography Fall 2013
GEOG 404 Spatial Thinking Fall 2013
GEOG 306 Intro to Urban Geography Spring 2014
GEOG 406 Geographic Urban Issues Spring 2014
GEOG 306 Intro to Urban Geography Fall 2014
GEOG 404 Spatial Thinking Fall 2014
GEOG 306 Intro to Urban Geography Spring 2015
GEOG 406 Geographic Urban Issues Spring 2015

Appendix K-226
Sarah Witham Bednarz
Professor
Department of Geography Texas A&M University College Station, Texas 77843-3147
s-bednarz@tamu.edu

A. PROFESSIONAL PREPARATION

<table>
<thead>
<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
</tr>
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<tr>
<td>Mount Holyoke College</td>
<td>Geography</td>
<td>A.B, magna cum laude, 1973</td>
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<td>University of Chicago</td>
<td>Geography</td>
<td>M.A.T., 1974</td>
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<tr>
<td>Texas A&amp;M University</td>
<td>Educ. Curriculum and Instruction</td>
<td>Ph.D., 1992</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Presidential Professor for Teaching Excellence, Texas A&M University, 2008
George J. Miller Award, National Council for Geographic Education, 2005
University Distinguished Achievement Award, Association of Former Students, 2004
Wakonse Fellow, Center for Teacher Excellence, 2004

C. RECENT PUBLICATIONS

Bowlick, F., Bednarz S.W., and Goldberg, DW. (accepted) Student Learning in an Introductory GIS Course: Using a Project Based Approach. Transactions in GIS.
http://dx.doi.org/10.1080/00221341.2014.935799


**D. COURSES TAUGHT RELEVANT TO ENGS OR ENST**

- GEOS 301 GEOS STUDY ABROAD Fall 2011
- GEOS 301GEOS STUDY ABROAD Spring 2013
- GEOS 484 Internship Spring 2013
- GEOS 101 The World in Six Drinks Fall 2014
- GEOS 484 Internship Fall 2014
- GEOG 404 Spatial Thinking Spring 2015
Michael Bishop  
Professor of Physical Geography  
Department of Geography Texas A&M University College Station, Texas 77843-3147  
Michael.Bishop@tamu.edu

A. PROFESSIONAL PREPARATION

<table>
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<th>Degree &amp; Year</th>
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<td>Western Michigan University</td>
<td>Geography</td>
<td>B.S., 1982</td>
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<td>Indiana State University</td>
<td>Physical Geography</td>
<td>M.A., 1984</td>
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<td>/Remote Sensing/GIS</td>
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<tr>
<td>Indiana State University</td>
<td>Physical Geography</td>
<td>Ph.D., 1987</td>
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<td>/Remote Sensing/GIS</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2012- Professor of Physical Geography - Department of Geography, Texas A&M University, College Station, Texas.

2006-2012 Professor of Physical Geography - Department of Geography and Geology, University of Nebraska at Omaha, Omaha, Nebraska.

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST
GEOG 361 Remote Sensing Geos Spring 2013
GEOG 361 Remote Sensing Geos Fall 2013
GEOG 352 GNSS in the Geosciences Fall 2014
GEOG 479 Principal of Geocomputation Fall 2014
GEOL 352 GNSS in the Geosciences Fall 2014
GEOG 390 Principles of GIS Spring 2015
Sarah D. Brooks
Associate Professor, Dept. of Atmospheric Sciences Texas A&M University, TX
http://atmo.tamu.edu/people/faculty/brookssarah.html

A. PROFESSIONAL PREPARATION

<table>
<thead>
<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<td>Massachusetts Institute of Technology</td>
<td>Chemistry</td>
<td>S.B., 1995</td>
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<tr>
<td>University of Colorado</td>
<td>Analytical Chemistry</td>
<td>Ph.D., 2002</td>
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<tr>
<td>Colorado State University</td>
<td>Atmospheric Science</td>
<td>Postdoc., 2002-2004</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2011-present  Associate Professor, Dept. of Atmospheric Sciences, Texas A&M University, TX
2005-2011     Assistant Professor, Dept. of Atmospheric Sciences, Texas A&M University, TX

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

ATMO 484 Internship Summer 2010
GEOS 105 Intro Environmental Geoscience Fall 2010
ATMO 484 Internship Fall 2011
GEOS 105 Intro Environmental Geoscience Fall 2011
GEOS 491 Research Fall 2011
ATMO 335 Atmospheric Thermodynamics Spring 2012
ATMO 484 Internship Spring 2012
ATMO 491 Research Spring 2012
ATMO 446 Physical Meteorology Fall 2012
ATMO 484 Internship Fall 2012
ATMO 491 Research Fall 2012
ATMO 463 Air Pollution Meteorology Spring 2013
ATMO 491 Research Spring 2013
GEOS 105 Intro to Environmental Geoscience Fall 2013
ATMO 485 Directed Studies Spring 2014
ATMO 591 Research Spring 2014
ATMO 463 Lab Method Atmospheric Science Fall 2014
ATMO 491 Research Spring 2015
David A. Brooks  
Professor  
Texas A&M University O&M Building Room 605 MS 3146 College Station, Texas 77843  
dbrooks@ocean.tamu.edu

A. PROFESSIONAL PREPARATION

<table>
<thead>
<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<tr>
<td>University of Maine, Orono</td>
<td>Electrical Engineering</td>
<td>B.S., 1965</td>
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<tr>
<td>University of Miami, Florida</td>
<td>Ocean Engineering</td>
<td>M.S., 1971</td>
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<td>University of Miami, Florida</td>
<td>Physical Oceanography</td>
<td>Ph.D., 1975</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

1987- Professor of Oceanography, Texas A&M University  
1997-2002 Executive Associate Dean and Associate Dean for Research, College of Geosciences, Texas A&M University  
1994-1997 Department Head of Oceanography, Texas A&M University

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

OCNG 251 Oceanography Spring 2010  
OCNG 251 Oceanography Fall 2010  
OCNG 251 Oceanography Spring 2011  
OCNG 251 Oceanography Fall 2011  
OCNG 251 Oceanography Spring 2012  
OCNG 251 Oceanography Fall 2012  
OCNG 251 Oceanography Spring 2013  
GEOS 101 Finding Nemo Fall 2013  
OCNG 251 Oceanography Fall 2013  
OCNG 251 Oceanography Spring 2014
GEOS 101 Finding Nemo Fall 2014
OCNG 251 Oceanography Fall 2014
OCNG 251 Oceanography Spring 2015
A. PROFESSIONAL PREPARATION

<table>
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<th>College/University</th>
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<th>Degree &amp; Year</th>
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<tbody>
<tr>
<td>University of California</td>
<td>Genetics with a Geography Minor</td>
<td>B.A., 1989</td>
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<tr>
<td>University of Florida</td>
<td>Geography</td>
<td>M.S., 1991</td>
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<tr>
<td>University of Iowa</td>
<td>Geography</td>
<td>Ph.D., 1995</td>
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B. ACADEMIC/PROFESSIONAL APPOINTMENTS

2012  College-Level Distinguished Achievement Award in Teaching, Association of Former Students, Texas A&M University.


2009  Student Led Award for Teaching Excellence (SLATE), Texas A&M University.

2007  Dean’s Distinguished Achievement Award – Faculty Teaching, College of Geosciences, Texas A&M University.

C. RECENT PUBLICATIONS


**D. COURSES TAUGHT RELEVANT TO ENGS OR ENST**

GEOG 491 Research Spring 2010
GEOG 203 Planet Earth Fall 2010
GEOG 491 Research Fall 2010
GEOG 491 Research: In Absentia Summer 2011
GEOG 203 Planet Earth Spring 2012
GEOG 335 Pattern & Proc Biogeography Fall 2012
GEOG 203 Planet Earth Spring 2013
GEOG 203 Planet Earth Fall 2013
GEOG 335 Pattern & Proc Biogeography Fall 2013
GEOG 325 Geography of Europe Spring 2014
GEOG 352 GNSS in the Geosciences Spring 2015
GEOL 352 GNSS in the Geosciences Spring 2015
Lisa Campbell  
Professor  
Department of Oceanography 3146 TAMU Texas A&M University  
lisacampbell@tamu.edu

A. PROFESSIONAL PREPARATION

<table>
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<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<tr>
<td>University of California</td>
<td>Biology with Honors</td>
<td>B.A., 1976</td>
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<tr>
<td>Stony Brook University</td>
<td>Marine Environmental Science</td>
<td>M.S., 1983</td>
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<tr>
<td>Stony Brook University</td>
<td>Oceanography</td>
<td>Ph.D., 1985</td>
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</table>

B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Professor, Department of Oceanography, Texas A&M University, since 2006  
Joint-Appointment in Department of Biology, since April 2002  
Guest Investigator, Woods Hole Oceanographic Institution, 2008-  
Associate Professor, Department of Oceanography, Texas A&M University, 1996-2006

C. RECENT PUBLICATIONS


**D. COURSES TAUGHT RELEVANT TO ENGS OR ENST**

OCNG 420 Intro Biological Oceanography Spring 2010
OCNG 251 Oceanography Fall 2010
OCNG 485 Directed Studies
OCNG 420 Intro Biological Oceanography Spring 2011
OCNG 491 Research Spring 2011
OCNG 651 Research Spring 2011
OCNG 491 Research Fall 2011
OCNG 420 Intro Biological Oceanography Spring 2012
OCNG 691 Research Spring 2012
OCNG 420 Intro Biological Oceanography Spring 2013
OCNG 420 Intro Biological Oceanography Fall 2013
OCNG 420 Intro Biological Oceanography Spring 2014
OCNG 491 Research Spring 2014
OCNG 491 Research Fall 2014
OCNG 420 Intro Biological Oceanography Spring 2015
OCNG 491 Research Spring 2015

Appendix K-238
Piers Chapman  
Professor  
Department of Oceanography Texas A&M University College Station, Texas 77843  
piers.chapman@tamu.edu  

A. PROFESSIONAL PREPARATION  

<table>
<thead>
<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<tbody>
<tr>
<td>University College of North Wales</td>
<td>Chemistry</td>
<td>B.Sc. Honors, 1971</td>
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<tr>
<td>University College of North Wales</td>
<td>Marine Chemistry</td>
<td>Ph.D., 1982</td>
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</table>

B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS  

2007- to date  Professor, Department of Oceanography, Texas A&M University  
Head of Department 2007-2013  
2014  Honorary Visiting Professor, School of the Environment, Flinders University  
2002 – 2007  Director, CREST Program, Louisiana State University.  
2002-2008  Adjunct Professor, Department of Oceanography and Coastal Sciences, LSU  
2004-2008  Adjunct Professor, Department of Environmental Studies, LSU  
1990 to 2002  Director, U.S. WOCE Office, Texas A&M University. This entailed overseeing the day to day running of the U.S. component of the world's largest oceanographic experiment, including arranging and attending meetings of the Scientific Steering Committee and other science meetings, running proposal review panels, overseeing staff, writing many reports on the progress of the program and producing budgets for U.S. and overseas federal agencies. These included many “one-off” items such as coordinating the organization of a multi-stage research program in the Indian Ocean.  

C. RECENT PUBLICATIONS  

Nunnally, C., Quigg, A., DiMarco, S., Chapman, P. and G. Rowe (2014). Benthic-Pelagic Coupling in
the Gulf of Mexico Hypoxic Area: Sedimentary enhancement of hypoxic conditions and near bottom primary production. *Continental Shelf Research*, http://dx.doi.org/10.1016/j.csr.2014.06.006.


**D. COURSES TAUGHT RELEVANT TO ENGS OR ENST**

GEOS 101 Moby Duck Fall 2013
OCNG 251 Oceanography Fall 2014
GEOS 101 Moby Duck Fall 2014
OCNG 251 Oceanography Spring 2015
Don R. Collins  
Professor  
Dept. of Atmospheric Sciences Texas A&M University TAMU 3150 College Station, TX 77845  
dcollins@tamu.edu

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
<th>Major</th>
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<td>Virginia Tech</td>
<td>Civil Engineering</td>
<td>B.S., 1994</td>
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<td>California Institute of Technology</td>
<td>Environmental Engineering Science</td>
<td>Ph.D., 2000</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2010-present Professor, Dept. of Atmospheric Sciences, Texas A&M University  
2010-2014 Director, Environmental Programs in Geosciences, Texas A&M University  
2007-2010 Associate Editor, *Journal of Geophysical Research-Atmospheres*

C. RECENT PUBLICATIONS

Lowenthal, D., Zielinska, B., Samburova, V., **Collins, D. R.**, Taylor, N. F.*, and Kumar, N., 2015,  


*D*graduate student advised

D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOS 105, GEOS 405
Andrew Dessler
Professor
Dept. of Atmospheric Sciences Texas A&M University TAMU 3150 College Station, TX 77845
adessler@tamu.edu

A. PROFESSIONAL PREPARATION

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<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp;Year</th>
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<td>Rice University</td>
<td>Physics</td>
<td>B.A, 1986</td>
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<td>Harvard University</td>
<td>Chemistry</td>
<td>A.M., 1990</td>
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<tr>
<td>Harvard University</td>
<td>Chemistry</td>
<td>Ph.D., 1994</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS
2007-present Professor, Dept. of Atmospheric Sciences, Texas A&M University
2005-2007 Associate Professor, Dept. of Atmospheric Sciences, Texas A&M University
2000 Senior Policy Analyst, White House Office of Science and Technology Policy, Environment Division, Washington, DC

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOS 210 Climate Change Spring 2010
ATMO 484 Internship Fall 2010
GEOS 444 Science & Politics Climate Change Fall 2011
ATMO 484 Internship Summer 2012
GEOS 210 Climate Change Spring 2012
GEOS 210 Climate Change Fall 2012
GEOS 444 Science and Politics Climate Change Spring 2013
GEOS 444 Science and Politics Climate Change Spring 2014
ATMO 484 Internship: In-Absentia Summer 2014
Steven F. DiMarco  
Professor  
Department of Oceanography Texas A&M University College Station, Texas 77843-3147  
sdimarco@tamu.edu

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<td>University of Dallas</td>
<td>Physics</td>
<td>B.A., 1985</td>
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<td>University of Texas at Dallas</td>
<td>Physics</td>
<td>M.S., 1988</td>
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<tr>
<td>University of Texas at Dallas</td>
<td>Physics</td>
<td>Ph.D., 1991</td>
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B. ACADEMIC/PROFESSIONAL APPOINTMENTS

2013-  Professor, Department of Oceanography, TAMU
2013-  Ocean Observing Team Lead, GERG, TAMU
2004-2013  Associate Professor, Department of Oceanography, TAMU
2000-2004  Associate Research Scientist, Department of Oceanography, TAMU

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

OCNG 491 Research Spring 2010
GEOS 470 Data Methods Geosciences Fall 2010
OCNG 491 Research Spring 2011
OCNG 491 Research Summer 2011
GEOS 470 Data Methods Geosciences Fall 2011
OCNG 491 Research Fall 2011
OCNG 485 Directed Studies Spring 2012
OCNG 491 Research Spring 2012
GEOS 470 Data Methods Geosciences Fall 2012
OCNG 491 Research Fall 2012
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GEOS 470 Data Methods Geosciences Spring 2014
A. PROFESSIONAL PREPARATION

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<td>Kansas State University</td>
<td>Geography</td>
<td>B.A., 1995</td>
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<tr>
<td>University of South Carolina</td>
<td>Geography</td>
<td>M.S., 1998</td>
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<tr>
<td>University of South Carolina</td>
<td>Geography</td>
<td>Ph.D., 2003</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2010-Present  Associate Professor, Geography, Texas A&M University
2003-2010     Assistant Professor, Geography, Texas A&M University
2005-2008     Oak Ridge National Laboratory (ORNL) Faculty Fellow, June-August 2005-2008
2002-2003     Visiting Assistant Professor, Geography, Texas A&M University

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOG 475 Advanced GIS Spring 2010
GEOS 485 Directed Studies Spring 2010
GEOG 491 Research Summer 2010
GEOG 475 Advanced GIS Spring 2011
GEOG 491 Research Spring 2011
GEOG 390 Principle of GIS Fall 2011
GEOG 475 Advanced GIS Spring 2012
GEOG 491 Research Spring 2012
GEOG 361 Remote Sensing Geoscience Fall 2012
GEOG 475 Advanced GIS Spring 2013
GEOG 491 Research Spring 2013
GEOG 491 Research Fall 2013
GEOG 475 Advanced GIS Spring 2014
GEOG 361 Remote Sensing GEOS Fall 2014
GEOG 475 Advanced GIS Spring 2015
Oliver W. Frauenfeld
Assistant Professor
Texas A&M University  Dept. Of Geography 810 O&M, 3147 TAMU
oliverf@geog.tamu.edu

A. PROFESSIONAL PREPARATION

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<tr>
<th>College/University</th>
<th>Major</th>
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<tr>
<td>University of Virginia</td>
<td>Environmental Sciences and Spanish</td>
<td>B.A., 1995</td>
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<td>M.S., 1999</td>
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<td>Environmental Sciences</td>
<td>Ph.D., 2003</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2010–         Assistant Professor, Department of Geography, Texas A&M University
2010–         Affiliate Scientist, National Snow and Ice Data Center, University of Colorado
2003–2009     Research Scientist I and II, Cooperative Institute for Research in Environmental Sciences /National Snow and Ice Data Center, University of Colorado

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

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<td>Planet Earth</td>
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<td>GEOG 324</td>
<td>Global Climatic Region</td>
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<td>GEOG 491</td>
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<td>Spring 2013</td>
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<td>GEOG 203</td>
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GEOG 203 Planet Earth Spring 2014
GEOG 324 Global Climatic Region Spring 2014
GEOS 485 Honor Directed Studies Spring 2014
GEOS 491 Honor Research Spring 2014
GEOG 203 Planet Earth Fall 2014
GEOG 213 Planet Earth Lab Fall 2014
GEOG 324 Global Climatic Region Spring 2015
John Richard Giardino
Professor of Geology & Geophysics and Water Management and Hydrological Science
Texas A&M University, College Station, Texas 77843
rickg@tamu.edu

A. PROFESSIONAL PREPARATION

<table>
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<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<tr>
<td>Southern Colorado State College</td>
<td>Geography/Geology</td>
<td>B.S., 1969</td>
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<tr>
<td>Arizona State University</td>
<td>Geography</td>
<td>M.A., 1971</td>
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<tr>
<td>University of Nebraska</td>
<td>Geomorphology</td>
<td>Ph.D., 1979</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Head of Geology and Geophysics, Texas A&M University, September 2011 to present
Dean of Graduate Studies, Texas A&M University, September 2000 – September 2007
Executive Director of Graduate Studies, Texas A&M University, June 1998-September 2000
Associate Director, Office of Graduate Studies, Texas A&M University, April 1996-June 1998
Head of Geography, Texas A&M University, September 1989-April 1996
Professor, Geology and Geophysics, Geography and Water Management and Hydrological Science, Texas A&M University, September 1989 to present; Hydrological Science, 2005 to present

C. RECENT PUBLICATIONS


**D. Courses Taught Relevant to ENGS or ENST**

GEOL 101 HNR-Principles of Geology Spring 2010
GEOL 491 Research Spring 2010
GEOL 101 Honor Principles of Geology Spring 2011
GEOL 491 Research Spring 2012
GEOL 311 Principles of Geology Writing Fall 2012
GEOL 491 Research Fall 2012
GEOL 491 Research Spring 2013
GEOL 491 Research : Costa Rica Summer 2013
GEOL 491 Research Fall 2013
GEOS 101 Seminar for Transfer Success Fall 2013
GEOL 420 Environmental Geology Spring 2014
GEOL 491 Research Spring 2014
GEOS 101 Introduction to Geosciences Spring 2014
GEOL 491 Research Fall 2014
GEOS 101 Forensic Geology Fall 2014
GEOS 101 Seminar for Transfer Success Fall 2014
GEOS 101 Geology of Texas Fall 2014
GEOL 491 Research Spring 2015
Daniel W. Goldberg  
Assistant Professor of Geography  
Texas A&M University Departments of Geography & CSE College Station, Texas 77843-3147  
Daniel.goldberg@tamu.edu

A. PROFESSIONAL PREPARATION

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<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp;Year</th>
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<tr>
<td>Rutgers University</td>
<td>Computer Science</td>
<td>B.S., 2002</td>
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<tr>
<td>University of Southern California</td>
<td>Computer Science</td>
<td>M.S., 2003</td>
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<tr>
<td>University of Southern California</td>
<td>Computer Science</td>
<td>Ph.D., 2010</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2014-present CyberGIS Fellow, National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign  
2012-present Director, Texas A&M University, GeoInnovation Service Center  
2013-present Assistant Professor of Computer Science & Engineering, Texas A&M University  
2012-present Assistant Professor of Geography, Texas A&M University  
2012 Visiting Scholar, Curtin University and Western Australia Department of Health  
2010-2012 Research Assistant Professor of Spatial Science, University of Southern California  
2010-2012 Associate Director, GIS Research Laboratory, University of Southern California

C. RECENT PUBLICATIONS

Goldberg DW, Cockburn MG. Improving Geocode Accuracy with Candidate Selection Criteria. Transaction in GIS 14(S1): 129-146 (2010).

D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOG 390 Principles of GIS Fall 2012  
GEOG 390 Principles of GIS Spring 2013  
GEOG 489 SPTP:GIS Programming Fall 2013  
GEOG 489 SPTP:GIS Programming Fall 2013  
GEOG 476 GIS Practicum Spring 2014

Appendix K-252
GEOG 489 SPTP Web GIS Spring 2014
GEOG 392 GIS Programming Fall 2014
GEOG 484 Internship Fall 2014
GEOG 491 Research Fall 2014
GEOG 392 GIS Programming Fall 2014
GEOG 484 Internship Fall 2014
GEOG 491 Research Fall 2014
Ethan Grossman  
Michel T. Halbouty Chair in Geology  
Department of Geology and Geophysics Texas A&M University College Station, Texas 77843  
e-grossman@tamu.edu, http://geoweb.tamu.edu/faculty/grossman/;  
http://geoweb.tamu.edu/profile/EGrossman

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
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<tr>
<td>State University of New York</td>
<td>Geology</td>
<td>B.S., 1976</td>
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<tr>
<td>University of Southern California</td>
<td>Geochemistry</td>
<td>Ph.D., 1982</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2010-present  Michel T. Halbouty Chair in Geology, Dept. of Geology & Geophysics  
8/2007-8/2008  Acting Executive Associate Dean and Associate Dean for Research, College of Geosciences  
6/2008-8/2008  Acting Deputy Director of Science Services, Integrated Ocean Drilling Program (IODP)-US Implementing Organization (USIO)  
2002-2010  Mollie B. and Richard A. Williford Professor, Dept. of Geology & Geophysics

C. RECENT PUBLICATIONS


Appendix K-254


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOL 311 Principles Geology Writing Spring 2010
GEOL 491 Research Spring 2011
GEOL 101 Principals of Geology Fall 2012
GEOL 311 Principles Geology Writing Fall 2012
GEOL 311 Principles Geology Writing Fall 2013
GEOL 311 Principles Geology Writing Spring 2014
GEOS 405 Environmental Geoscience Fall 2014
GEOS 405 Environmental Geoscience Spring 2015
Inci Güneralp  
Assistant Professor  
Department of Geography, College of Geosciences, Texas A&M University  
R 810, Eller O&M Building, College Station, TX 77843  
iguneralp@geos.tamu.edu, http://geography.tamu.edu/profile/IGuneralp

A. PROFESSIONAL PREPARATION

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<tr>
<td>Instanbul Technical University</td>
<td>Civil Engineering</td>
<td>B.S., 1994</td>
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<tr>
<td>Instanbul Technical University</td>
<td>Civil Engineering</td>
<td>M.S., 1999</td>
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<tr>
<td>University of Illinois at Urbana-Champaign</td>
<td>Geography</td>
<td>Ph.D., 2007</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2009–Present Environmental Faculty, Environmental Programs in Geosciences, College of Geosciences, Texas A&M University.  
2009–Present Water Faculty, Water Management and Hydrological Science Program, Texas A&M University.  
2008–Present Assistant Professor, Department of Geography, Texas A&M University.

C. RECENT PUBLICATIONS


**D. COURSES TAUGHT RELEVANT TO ENGS OR ENST**

GEOG 203 Planet Earth Spring 2010
GEOG 360 Natural Hazards Fall 2010
GEOG 491 Research Fall 2010
GEOG 360 Natural Hazards Spring 2011
GEOG 491 Research Spring 2011
GEOG 491 Research Spring 2012
GEOG 203 Planet Earth Fall 2012
GEOG 360 Natural Hazards Fall 2012
GEOG 360 Natural Hazards Spring 2013
GEOG 484 Internship: In-Absentia Summer 2013
GEOG 203 Planet Earth Fall 2013
GEOG 467 Dyn Mod Earth & Env System Fall 2013
GEOG 484 Internship Fall 2013
GEOG 203 Planet Earth Spring 2014
GEOG 360 Natural Hazards Spring 2014
GEOG 484 Internship Spring 2014
GEOG 203 Planet Earth Fall 2014
GEOG 360 Natural Hazards Fall 2014
GEOG 491 Research Fall 2014
GEOG 203 Planet Earth Spring 2015
GEOG 213 Planet Earth Lab Spring 2015
GEOG 360 Natural Hazards Spring 2015
Bruce E. Herbert  
Professor, Geology & Geophysics, 3115 TAMU Texas A&M University, College Station, Texas 77843-3115

A. PROFESSIONAL PREPARATION

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<tbody>
<tr>
<td>Colgate University</td>
<td>Chemistry</td>
<td>B.A., 1982</td>
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<td>University of California</td>
<td>Soil Science</td>
<td>M.S., 1988</td>
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<tr>
<td>University of California</td>
<td>Soil Science</td>
<td>Ph.D., 1992</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2007-2011 Assistant Department Head and Graduate Coordinator, Geology & Geophysics.  
2002-2007 Associate Director of Geosciences, Information Technology in Science (ITS) Center for Learning and Teaching, Texas A&M University.  
1997-2006 Associate Professor, Geology & Geophysics, Texas A&M, College Station, TX.  
2013-presents Chair, Data Management Working Group, Texas Digital Library  
2012- 2014 Associate Editor, Journal of Geoscience Education

C. RECENT PUBLICATIONS


Appendix K-258

E. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOL 420 Environmental Geology Spring 2010
GEOL 685 Directed Studies Spring 2010
GEOL 104 Physical Geology Fall 2010
GEOL 691 Research Fall 2010
GEOL 691 Research: In-Absentia Fall 2010
GEOL 420 Environmental Geology Spring 2011
GEOL 104 Physical Geology Fall 2011
GEOL 685 Directed Studies Fall 2011
GEOL 420 Environmental Geology Spring 2012
identify a rip current and hazardous surf conditions. *Natural Hazards*, 72, 1123-1138.


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOG 205 Environmental Change Spring 2014
GEOG 331 Geomorphology Spring 2014
GEOG 352 GPS in the Geosciences Spring 2014
GEOG 485 Directed Studies Spring 2014
GEOI 352 GPS in the Geosciences Spring 2014
GEOL 491 Research Spring 2014
GEOG 370 Coastal Processes Fall 2014
GEOG 485 Directed Studies Fall 2014
GEOL 485 Directed Studies Fall 2014
GEOS 101 Intro to Geosciences Fall 2014
GEOS 301 GEOS Study Abroad Fall 2014
GEOS 491 Research Fall 2014
GEOG 205 Environmental Change Spring 2015
GEOG 485 Directed Studies
GEOG 491 Research Spring 2015
GEOL 491 Research Spring 2015
GEOS 301 GEOS Study Abroad Spring 2015
GEOS 491 Research Spring 2015
Wendy Jepson  
Associate Professor Department of Geography  
810 Eller O&M Building, MS 3147 Texas A&M University, College Station, TX 77843  
wjepson@tamu.edu

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<tr>
<td>University of Wisconsin, Madison</td>
<td>Geography; History</td>
<td>B.A. (Honors), 1994</td>
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<td>Syracuse University</td>
<td>Geography</td>
<td>M.A., 1997</td>
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<tr>
<td>University of California, Los Angeles</td>
<td>Geography</td>
<td>Ph.D., 2003</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2014 – Present Director of Undergraduate Programs, Department of Geography, Texas A&M University  
2010 – Present Associate Professor, Department of Geography, Texas A&M University  
2004 - 2010 Assistant Professor, Department of Geography, Texas A&M University  
2003 - 2004 Research Scientist, Department of Geography, Texas A&M University (non-tenure track)

C. RECENT PUBLICATIONS


E. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOG 201 Introduction to Human Geography Spring 2010  
GEOG 430 Environmental Justice Spring 2010
GEOG 201 Introduction. to Human Geography Fall 2010
GEOG 491 Research Fall 2010
GEOS 491 Research Fall 2010
GEOG 430 Environmental Justice Spring 2011
GEOS 491 Research Spring 2011
GEOG 330 Resources & The Environment Spring 2012
GEOG 430 Environmental Justice Spring 2012
GEOS 481 Seminar Spring 2012
GEOG 430 Environmental Justice Spring 2013
GEOG 201 Introduction. to Human Geography Spring 2014
GEOG 430 Environmental Justice Spring 2014
GEOG 201 Introduction. to Human Geography Fall 2014
GEOG 330 Resources & The Environment Fall 2014
GEOG 201 Introduction. to Human Geography Spring 2015
GEOG 491 Research Spring 2015
Andrew George Klein
Associate Professor
Department of Geography Texas A&M University
klein@geog.tamu.edu,  http://geography.tamu.edu/profile/AKlein

A. PROFESSIONAL PREPARATION

<table>
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<th>College/University</th>
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<td>Macalester College</td>
<td>Geology and Environmental Studies with Geography Core</td>
<td>B.A. (Honors), 1990</td>
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<td>Cornell University</td>
<td>Geological Sciences</td>
<td>Ph.D., 1996</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

**Associate Professor**, Texas A&M University, Department of Geography, 2004-present. Investigating the cryosphere using satellite remote sensing and geographic information systems

**Assistant Professor**, Texas A & M University, Department of Geography, 1998-2004.

C. RECENT PUBLICATIONS

E. COURSES TAUGHT RELEVANT TO ENGS OR ENST
GEOL 485 Directed Studies Spring 2010
GEOS 405 Environmental Geoscience Spring 2010
GEOG 361 Remote Sensing Geoscience Fall 2010
GEOG 476 GIS Practicum Spring 2011
GEOG 491 Research Spring 2011
GEOG 332 Thematic Cartography Fall 2011
GEOG 361 Remote Sensing GEOS Fall 2011
Anthony Hayden Knap
James R. Whatley Endowed Chair in Geosciences, Professor of Oceanography and Director, Geochemical and Environmental Research Group
Texas A&M University 833 Graham Road College Station, Texas 77845
tknap@tamu.edu

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
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<td>Wisconsin State University</td>
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<td>B.S., 1971</td>
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<tr>
<td>University of South Hampton, UK</td>
<td>Oceanography</td>
<td>M.S., 1972</td>
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<tr>
<td>University of South Hampton, UK</td>
<td>Chemical Oceanography</td>
<td>Ph.D., 1978</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2015-present  Member Texas OneGulf Center of Excellence Leadership Committee – Restore
2014-present  Member Review Board, Chinese National Academy of Sciences, Qindao, China
2014-present  Board of Directors, Maritine Insurance Solutions, Ltd. Bermuda
2013-present  James R. Whatley Endowed Chair of Geosciences, Texas A&M University
2013-present  Director, Geochemical and Environmental Research Group, Professor of Oceanography, Texas A&M University
2012–present  Member, International Steering Committee for the Global Ocean Observing System
2010-2011  Advisory Council – Offshore Energy Institute, Portland, Maine
2010-present  Board of Directors, Parhelion Underwriters, London, UK
2009-present  Board of Directors, Arvak Management
2008-2010  Member, Geneva Association Panel for Climate Change
2008-present  Board of Directors, Shoreline Insurance Managers
2007  Honorary Fellow, Plymouth Marine Laboratory
2007-present  Executive Committee, Partnership for Observations of the Global Ocean (POGO)
2006-2012  President and Director, BIOS
2006-2012  Appointed to Underwriting, Audit and Compensation Committees, Flagstone Reinsurance
2005-2012  Member of Board of Directors, Flagstone Re-insurance Holdings
2003-2006  President and Director, BBSR
2003-2006  Rapporteur for IOC/COOP/GOOS to WMO/JCOMM

C. RECENT PUBLICATIONS


A. PROFESSIONAL PREPARATION

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<th>College/University</th>
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<td>Emory &amp; Henry College</td>
<td>Geography</td>
<td>B.A., 1992</td>
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<td>University of Tennessee</td>
<td>Geography</td>
<td>M.S., 1995</td>
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<tr>
<td>University of Tennessee</td>
<td>Geography</td>
<td>Ph.D., 2000</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2013– Texas A&M University, College Station; Department of Geography; Professor (Assistant Department Head 2014–present)

2007–2013 Texas A&M University, College Station; Department of Geography; Associate Professor

2010–2014 Texas A&M University, College Station, College of Geosciences, Associate Member of the Environmental Faculty

2000–2007 Texas A&M University, College Station; Department of Geography; Assistant Professor

C. RECENT PUBLICATIONS


E. COURSES TAUGHT RELEVANT TO ENGS OR ENST

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<td>Research Spring</td>
<td>2010</td>
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<td>GEOG 450</td>
<td>Field Geography Summer</td>
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<td>GEOG 450</td>
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<td>GEOG 491</td>
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<td>GEOG 203</td>
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<td>GEOG 435</td>
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<td>GEOG 435</td>
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Appendix K-268
A. PROFESSIONAL PREPARATION

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<th>College/University</th>
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<tr>
<td>Massachusetts Institute of Technology</td>
<td>Earth and Planetary Science</td>
<td>S.B., 1984</td>
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<td>Massachusetts Institute of Technology</td>
<td>Meteorology</td>
<td>S.M., 1987</td>
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<tr>
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<td>Meteorology</td>
<td>Ph.D., 1990</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Acting Executive Associate Dean and Associate Dean for Research, College of Geosciences, Texas A&M University, 2008-2009
Associate Director, The Center for Atmospheric Chemistry and the Environment, 2003-07
Associate Professor of Meteorology, Texas A&M University, 1996-00

C. RECENT PUBLICATIONS


National Research Council, 2014: Review of the National Science Foundation’s Division on Atmospheric and Geospace Sciences Draft Goals and Objectives Document. The National Academies Press, Washington, D.C., 26 pp. (Committee member and co-author)


**E. COURSES TAUGHT RELEVANT TO ENGS OR ENST**

ATMO 484 Internship: In-Absentia Summer 2010
ATMO 201 Atmospheric Science Fall 2010
ATMO 484 Internship Fall 2010
ATMO 324 Physical & Regional Climatology Fall 2011
ATMO 456 Practice Weather Forecasting Spring 2012
ATMO 324 Physical & Regional Climatology Fall 2012
ATMO 484 Internship Fall 2012
ATMO 324 Physical & Regional Climatology Spring 2013
ATMO 324 Physical & Regional Climatology Spring 2014
ATMO 456 Practice Weather Forecasting Spring 2014
ATMO 484 Internship: In Absentia Summer 2014
ATMO 491 Research Summer 2014
ATMO 491 Research Fall 2014
ATMO 324 Physical & Regional Climatology Spring 2015
ATMO 484 Internship Spring 2015
ATMO 491 Research Spring 2015
GEOS 210 Climate Change Spring 2015

Appendix K-270
Kathleen O’Reilly  
Associate Professor  
Department of Geography, 810 O&M Building MS 3147 Texas A&M University College Station, TX 77843-3147  
koreilly@geos.tamu.edu, korgeographer.wordpress.com

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
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<th>Degree &amp;Year</th>
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<tr>
<td>Oregon State University</td>
<td>Pre-engineering</td>
<td>1986</td>
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<tr>
<td>Westminster Choir College</td>
<td>Voice</td>
<td>B.M., 1989</td>
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<tr>
<td>University of Alabama</td>
<td>Geography</td>
<td>M.S., 1996</td>
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<tr>
<td>University of Iowa</td>
<td>Geography</td>
<td>Ph.D., 2002</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2011- Associate Professor, Department of Geography. Texas A&M University Faculty Member, Water Management and Hydrological Sciences Program Faculty Member, Women and Gender Studies Program

2006-2011 Assistant Professor, Department of Geography, Texas A&M University

C. RECENT PUBLICATIONS


E. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOG 202 Geography of Global Village Spring 2010
GEOG 202 Geography of Global Village Fall 2010
GEOG 327 Geography of South Asia Fall 2010
GEOG 202 Geography of Global Village Fall 2011
GEOG 401 Political Geography Fall 2011
GEOG 327 Geography of South Asia Spring 2012
GEOG 327 Geography of South Asia Fall 2014
GEOG 401 Political Geography Fall 2014
GEOG 202 Geography of Global Village Spring 2015
GEOG 330 Resources & The Environment Spring 2015
GEOG 491 Research Spring 2015
Pamela Plotkin  
Associate Research Professor  
TAES Annex Building Texas A&M University College Station, TX 77843-3417  
Plotkin@tamu.edu

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
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<td>Pennsylvania State University</td>
<td>Wildlife Science</td>
<td>B.S., 1984</td>
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<td>Texas A&amp;M University</td>
<td>Zoology</td>
<td>M.S., 1989</td>
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<td>Texas A&amp;M University</td>
<td>Zoology</td>
<td>Ph.D., 1994</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2011 – current: Director, Texas Sea Grant College Program; Associate Research Professor, Texas A&M University, Department of Oceanography; Graduate Faculty, Marine Biology Interdisciplinary Program; Graduate Faculty, Texas A&M University at Galveston.
2007 - 2011: Deputy Director, Cornell University, Office of Sponsored Programs.
2002- 2007: Assistant Vice President for Research, East Tennessee State University.
2000 – 2002: Director of Research & Sponsored Programs, Frostburg State University.

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

OCNG 491 Research Spring 2014
Appendix K-274

Steven Quiring
Associate Professor
Department of Geography Texas A&M University College Station, TX 77843-3147
http://climatology.tamu.edu

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
<th>Major</th>
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<tr>
<td>University of Winnipeg</td>
<td>Geography</td>
<td>B.A.(Honors), 1999</td>
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<td>University of Manitoba</td>
<td>Geography</td>
<td>M.A., 2001</td>
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<td>University of Delaware</td>
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<td>Ph.D., 2005</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Associate Professor, Texas A&M University, Department of Geography, September 2011–present
Member, NASA Soil Moisture Active/Passive (SMAP) Early Adopter Team, March 2014–present
Water Faculty, Texas A&M University Interdisciplinary Graduate Water Degree Program, 2006–present
Associate Member of the Environmental Faculty, College of Geosciences, Texas A&M University, 2009–present
Faculty Collaborator, Smart Grid Center, Texas A&M Engineering Experimental Station, 2014–present
Assistant Professor, Texas A&M University, Department of Geography, 2005–2011

C. RECENT PUBLICATIONS


do:10.5194/hess-18-139-2014

D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOG 434 Hydrology & Environment Spring 2010
GEOG 485 Examining the Variability of the North American Monsoon Spring 2010
GEOG 485 Indian Ocean Dipole Spring 2010
GEOG 203 Planet Earth Summer 2010
GEOG 203 Planet Earth Fall 2010
GEOG 203 Planet Earth Spring 2011
GEOG 380 Environmental Workshop Summer 2011
GEOG 203 Planet Earth Fall 2011
GEOG 434 Hydrology & Environment Fall 2011
GEOG 485 Hydroclimatology Fall 2011
GEOG 434 Hydrology and Environment Fall 2012
GEOG 324 Global Climate Regions Spring 2013
GEOS 491 Future Flooding in Houston Spring 2013
GEOS 491 Soil Moisture and drought monitoring Spring 2013
GEOG 380 Environmental Workshop Summer 2013
GEOG 434 Hydrology and Environment Fall 2013
GEOS 101 Death and Destruction: How drought changed History Fall 2013
GEOS 491 Urban Climates Fall 2013
GEOS 491 Land-atmosphere interactions Fall 2013
GEOS 491 Rain over dry soils Spring 2014
GEOS 491 Land-atmosphere interactions Spring 2014
GEOG 434 Hydrology and Environment Fall 2014
GEOS 101 Death and Destruction: How drought changed history Fall 2014
GEOG 380 Environmental Workshop (Study Abroad in Costa Rica) Summer 2014
Mary Jo Richardson  
Regents Professor  
Departments of Oceanography and Geology/Geophysics Texas A&M University, College Station TX 77843  
richardson@ocean.tamu.edu

A. PROFESSIONAL PREPARATION

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<tr>
<td>Smith College</td>
<td>Geology, Mathematics</td>
<td>A.B. Magna Cum Laude, 1975</td>
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<tr>
<td>Massachusetts Institute of Technology</td>
<td>Oceanography</td>
<td>Ph.D., 1980</td>
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<td>Woods Hole Oceanographic Institution</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2006-present Texas A & M University, Oceanography and Geology/Geophysics Regents’ Professor  
1994-2006 Texas A & M University, Oceanography and Geology/Geophysics Professor  
2002–2004 Texas A&M University, College of Geosciences Acting/Interim Dean  
1993-2002 Texas A & M University, College of Geosciences Associate Dean for Academic Affairs

C. RECENT PUBLICATIONS

Richardson, M.J., W.D., Gardner, 2012. Field-Based Laboratories In Oceanography And Geology During A Study Abroad Semester In Italy, Ocean Sciences, Salt Lake City, UT, Feb. 2012.  

E. COURSES TAUGHT RELEVANT TO ENGS OR ENST

OCNG 251 Oceanography Spring 2010  
OCNG 251 HNR Oceanography Fall 2010
OCNG 491 Research Fall 2010
OCNG 251 HNR Oceanography Spring 2011
OCNG 251 Oceanography Spring 2011
OCNG 491 Research Spring 2011
GEOL 101 Principles of Geology Fall 2011
GEOL 101 Principles of Geology: Italy Fall 2011
ONCG 251 HNR Oceanography Spring 2012
OCNG 251 Oceanography Spring 2012
OCNG 251 HNR Oceanography Fall 2012
OCNG 251 Oceanography Fall 2012
GEOS 481 Seminar Spring 2013
OCNG 251 Oceanography Spring 2013
GEOS 481 Seminar Fall 2013
OCNG 251 Oceanography Spring 2014
OCNG 251 Oceanography Spring 2014
OCNG 485 Directed Studies Spring 2014
OCNG 251 Oceanography Fall 2014
GEOS 481 Seminar Fall 2014
GEOS 481 Seminar Spring 2015
ONCG 251 Oceanography Spring 2015
OCNG 485 Directed Studies Spring 2015
A. PROFESSIONAL PREPARATION

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<td>Pomona College</td>
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<td>Pasadena City College</td>
<td>Geology</td>
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<tr>
<td>University of California at Riverside</td>
<td>Geology</td>
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<tr>
<td>Indiana University</td>
<td>Advanced field Geology training</td>
<td>1995</td>
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<tr>
<td>University of California at Riverside</td>
<td>Geological Sciences</td>
<td>Ph.D., 2000</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Texas A&M University, Assistant Dean 2011 – present: Diversity & Graduate Student Recruitment & Development, College of Geosciences
Dept. of Geology & Geophysics, Research Associate Professor

Purdue University: Co-Director, Center for Research and Engagement in Science and Mathematics Education and Earth and Atmospheric Sciences, Associate Professor, 2006 – 2011

C. RECENT PUBLICATIONS

National Research Council: Committee on Trends and Opportunities in Federal Earth Science Education and Workforce Development (member and co-author), 2013, Preparing the Next Generation of Earth Scientists: An Examination of Federal Education and Training Programs, NRC Report #18369


A. PROFESSIONAL PREPARATION

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<tr>
<td>University of Colorado, Boulder</td>
<td>Environmental Conservation</td>
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<td>University of California, Berkeley</td>
<td>Paleoceanography</td>
<td>M.A., 2001</td>
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<td>University of California, Berkeley</td>
<td>Paleoceanography</td>
<td>Ph.D., 2005</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

1/08-Present  Assistant Professor, Texas A&M University, Department of Geography and Ocean Drilling and Sustainable Earth Sciences (ODASES)  Environmental Geosciences Program Professor  Director, Stable Isotope Geosciences Facility

6/05-1/08  Postdoctoral Scholar, Stanford University (Research Advisor: Dr. Robert Dunbar)

C. RECENT PUBLICATIONS


Appendix K-279
*Indicates graduate student, **Indicates undergraduate student

D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOG 203 Planet Earth Spring 2010
GEOG 442 Past Climates Fall 2010
GEOS 405 Geosciences Capstone Fall 2010
GEOG 203 Planet Earth Spring 2011
GEOS 495 Geosciences Capstone Spring 2011
GEOG 442 Past Climates Fall 2011
GEOG 405 Geosciences Capstone Fall 2011
GEOS 491 Research Fall 2011
GEOG 491 Research Spring 2012
GEOS 405 Environmental Geoscience Fall 2012
GEOS 491 Research Fall 2012
GEOG 203 Planet Earth Spring 2013
GEOS 405 Environmental Geoscience Spring 2013
GEOG 442 Past Climates Fall 2013
GEOS 405 Environmental Geoscience Fall 2013
GEOG 203 Planet Earth Spring 2014
GEOS 405 Environmental Geoscience Fall 2014
GEOG 442 Past Climates
GEOS 405 Environmental Geoscience Spring 2015
A. PROFESSIONAL PREPARATION

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<tr>
<td>Indian Institute of Technology</td>
<td>Physics</td>
<td>Master of Science, 1986</td>
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<tr>
<td>Princeton University</td>
<td>Atmospheric and Oceanic Program</td>
<td>M.A., 1988</td>
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<td>Princeton University</td>
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<td>Ph.D., 1990</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2005-present Professor of Atmospheric Sciences, Texas A&M University
2000-2005 Scientist III, National Center of Atmospheric Research, Boulder, Colorado
1996-2000 Scientist II, National Center of Atmospheric Research, Boulder, Colorado

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

ATMO 321 Comp App Atmos Science Spring 2010
ATMO 484 Internship: In-Absentia Summer 2010
ATMO 324 Physical & Regional Climatology Fall 2010
ATMO 321 Comp App Atmos Science Spring 2011
ATMO 321 Comp App Atmos Science Spring 2012
ATMO 201 Atmospheric Science Fall 2012
ATMO 202 Atmospheric Science Lab Fall 2012
ATMO 321 Comp App Atmos Science Spring 2013
ATMO 485 Directed Studies Spring 2013
ATMO 484 Internship: In-Absentia Summer 2013
ATMO 491 Research Summer 2013
ATMO 201 Atmospheric Science Fall 2013
ATMO 202 Atmospheric Science Fall 2013
ATMO 491 Research Fall 2013
ATMO 321 Comp App Atmos Science Spring 2014
ATMO 484 Internship: In Absentia Summer 2014
ATMO 491 Research Summer 2014
ATMO 459 Tropical Meteorology Fall 2014
ATMO 321 Comp App Atmos Science Spring 2015
A. PROFESSIONAL PREPARATION

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<tr>
<td>Johannes Gutenberg Universitat</td>
<td>Chemistry</td>
<td>MSc, 1993</td>
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<tr>
<td>Johannes Gutenberg Universitat</td>
<td>Chemistry</td>
<td>DSc magna cum laude, 1997</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2012-present Associate Professor, Texas A&M University, Department of Atmospheric Sciences

2012-2013 Researcher, Kjemisk Institutt, Universitetet i Oslo
2005-2012 Assistant Professor, Texas A&M University, Department of Atmospheric Sciences
2003-2005 Emmy Noether Research Fellow, University of Bremen, Germany
2001-2002 Assistant Specialist, University of California at Berkeley, Department of Environmental Science, Policy, and Management (ESPM)
1998-2001 Post-doctoral Research Fellow, University of California at Berkeley, ESPM
1997-1998 Post-doctoral Researcher at the Max-Planck-Institute of Chemistry, Air Chemistry Department, Mainz, Germany

C. RECENT PUBLICATIONS


E. COURSES TAUGHT RELEVANT TO ENGS OR ENST

ATMO 201 Weather & Climate Summer 2010
UGST 181 Science Denialism Fall 2011
ATMO 363 Atmospheric Chemistry and Air Pollution Fall 2013
ATMO 201 Weather Climate Spring 2014
ATMO 363 Atmospheric Chemistry and Air Pollution Fall 2014
A. PROFESSIONAL PREPARATION

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<th>College/University</th>
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<tr>
<td>University of San Diego</td>
<td>Marine Science, emphasis in Chemistry B.A. with Honors</td>
<td>2001</td>
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<tr>
<td>University of Hawaii-Manoa</td>
<td>Chemical Oceanography</td>
<td>M.S., 2005</td>
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<td>University of Washington</td>
<td>Chemical Oceanography</td>
<td>Ph.D., 2011</td>
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<td>Woods Hole Oceanographic Institution</td>
<td>Postdoctoral Scholar/Investigator</td>
<td>2011-2013</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Assistant Professor, Texas A&M University, College Station, TX, 2014-present
Postdoctoral Scholar, Woods Hole Oceanographic Institution, Woods Hole, MA, 2011-2013

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

OCNG 251 Oceanography Fall 2014
OCNG 251 Oceanography Spring 2015
OCNG 491 Research Spring 2015
Achim Stössel,
Associate Professor
Department of Oceanography Texas A&M University College Station, TX 77843-3146
astoessel@ocean.tamu.edu

A. PROFESSIONAL PREPARATION

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<th>College/University</th>
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<tr>
<td>University of Kiel</td>
<td>Physical Oceanography</td>
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<td>University of Hamburg</td>
<td>Physical Oceanography</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Associate Professor, Dept. of Oceanography, Texas A&M University, 2000-present
Assistant Professor, Dept. of Oceanography, Texas A&M University, 1994-2000
Research Scientist, Max-Planck-Institute for Meteorology, 1990-1994

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

OCNG 251 Oceanography Spring 2010
OCNG 410 Intro to Physical Oceanography Spring 2010
OCNG 410 Intro to Physical Oceanography Fall 2010
OCNG 251 Oceanography Spring 2011
OCNG 410 Intro to Physical Oceanography Spring 2011
OCNG 410 Intro to Physical Oceanography Fall 2011

Appendix K-286
OCNG 251 Oceanography Spring 2012
OCNG 410 Intro to Physical Oceanography Spring 2012
OCNG 410 Intro to Physical Oceanography Fall 2012
OCNG 485 Directed Studies Fall 2013
OCNG 251 Oceanography Spring 2014
OCNG 410 Intro to Physical Oceanography Spring 2014
OCNG 491 Research Spring 2014
OCNG 410 Intro to Physical Oceanography Fall 2014
OCNG 491 Research Fall 2014
OCNG 251 Oceanography Spring 2015
OCNG 491 Research Spring 2015
A. PROFESSIONAL PREPARATION

<table>
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<tr>
<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<tr>
<td>University of California, Los Angeles</td>
<td>Geography</td>
<td>B.A., 1981</td>
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<td>University of California, Los Angeles</td>
<td>Geomorphology</td>
<td>M.A., 1983</td>
</tr>
<tr>
<td>University of California, Los Angeles</td>
<td>Geomorphology</td>
<td>Ph.D., 1989</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

2010-2014: Department Head, Geography, College of Geosciences, Texas A&M
2002-2008: Associate Dean of Academics, College of Geosciences, Texas A&M
2002-: Professor of Geography and Geology & Geophysics

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOG 320 The Middle East Spring 2010
GEOG 400 Arid Lands Geomorphology Spring 2010
GEOG 489 Modern Middle East Spring 2010
GEOG 320 The Middle East Fall 2010
GEOG 400 Arid Lands Geomorphology Spring 2011
GEOG 489 Modern Middle East Spring 2011
GEOG 320 The Middle East Fall 2011
GEOG 489 Modern Middle East Spring 2012
GEOG 320 The Middle East Fall 2012
GEOG 400 Arid Lands Geomorphology Spring 2013
GEOG 485 Directed Studies Spring 2013
GEOG 320 The Middle East Fall 2013
GEOS 101 Geosciences and the Arts Fall 2013
GEOG 320 The Middle East Spring 2014
GEOG 320 The Middle East Fall 2014
GEOS 101 Geosciences and the Arts Fall 2014
GEOS 105 Introduction Environmental Geoscience Fall 2014
Deborah J. Thomas
Department Head, Oceanography
Department of Oceanography Texas A&M University College Station, Texas 77843-3147
dthomas@ocean.tamu.edu

A. PROFESSIONAL PREPARATION

<table>
<thead>
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<th>College/University</th>
<th>Major</th>
<th>Degree &amp; Year</th>
</tr>
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<tbody>
<tr>
<td>Brown University</td>
<td>Geological Sciences</td>
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<tr>
<td>University of North Carolina</td>
<td>Marine Sciences</td>
<td>M.S., 1998</td>
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<td>University of North Carolina</td>
<td>Marine Sciences</td>
<td>Ph.D., 2002</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS
(anticipated) Professor, Texas A&M University, Sept 2015
Department Head, Oceanography, Texas A&M University, June 2015 - present
Interim Department Head, Oceanography, Texas A&M University, Sept 2013 – May 2015
Assistant Department Head, Oceanography, Texas A&M University, Sept 2012 – August 2013
Associate Professor, Texas A&M University, Sept 2010
Joint Appointment, Department of Geology & Geophysics, 2005 - present
Assistant Professor, Texas A&M University, Jan 2004

C. RECENT PUBLICATIONS
(* indicates my student as author):
Thomas, D.J. and *Subt, C., in revision Marine Geology, The Evolution of Early Paleogene Pacific Deep-water Lead Isotope Composition – Implications for Reconstructing the Rate of Meridional Overturning Circulation.

*Thomas, D.J. and *Tilghman, D., 2014, Geographically Different Oceanographic Responses to Global Warming During the Cenomanian - Turonian interval and Oceanic Anoxic Event 2, Palaeogeogr., Palaeoclim., Palaeoecol., http://dx.doi.org/10.1016/j.palaeo.2014.06.014.


*Murphy, D.P. and Thomas, D.J.,* 2010, The role of intermediate water circulation in stadial-interstadial oxygenation variations along the southern California margin, *Quaternary Science Reviews* 29, 2442-2450.

**D. COURSES TAUGHT RELEVANT TO ENGS OR ENST**

OCNG 430 Intro Geological OCNG Spring 2010
OCNG 251 Oceanography Fall 2010
OCNG 491 Research Fall 2010
OCNG 430 Intro Geological OCNG Spring 2011
OCNG 491 Research Spring 2011
OCNG 251 Oceanography Fall 2011
OCNG 430 Intro Geological OCNG Fall 2011
OCNG 491 Research Fall 2011
OCNG 491 Research Spring 2012
OCNG 430 Intro Geological OCNG Fall 2012
OCNG 491 Research Fall 2012
OCNG 251 Oceanography Spring 2013
OCNG 491 Research Spring 2013
OCNG 430 Intro Geological OCNG Fall 2013
OCNG 491 Research Fall 2013
OCNG 491 Research Spring 2014
OCNG 430 Intro Geological OCNG Spring 2015
Daniel C.O. Thornton
Associate Professor
Assistant Department Head
Department of Oceanography, Texas A&M University, College Station, TX 77843-3147
dthornton@ocean.tamu.edu

A. PROFESSIONAL PREPARATION

<table>
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<th>Major</th>
<th>Degree &amp;Year</th>
</tr>
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<tbody>
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<td>Queen Mary, University of London</td>
<td>Marine &amp; Freshwater</td>
<td>Biology B.Sc., 1991</td>
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<td>Queen Mary, University of London</td>
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<td>Biology Ph.D., 1996</td>
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<tr>
<td>University of Essex</td>
<td>Marine Ecology &amp; Biogeochemistry</td>
<td>1996-1999</td>
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<td>University of Southern California</td>
<td>Biogeochemistry</td>
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B. ACADEMIC/PROFESSIONAL APPOINTMENTS

2013- present  Assistant Department Head, Texas A&M University
2010- present  Associate Professor, Texas A&M University
2004- 2010     Assistant Professor, Texas A&M University

C. PUBLICATIONS


**E. COURSES TAUGHT RELEVANT TO ENGS OR ENST**

- OCNG 251 Oceanography Spring 2010
- OCNG 251 Oceanography Spring 2011
- OCNG 251 Oceanography Fall 2011
- OCNG 491 Research Fall 2011
- OCNG 251 Oceanography Spring 2012
- OCNG 491 Research Spring 2012
- OCNG 251 Oceanography Fall 2012
- OCNG 491 Research Fall 2012
- OCNG 251 Oceanography Spring 2013
- OCNG 489 Microbial Oceanography Spring 2013
- GEOS 101 Limits to Life Fall 2013
- OCNG 491 Research Fall 2013
- GEOS 105 Intro Environmental Geoscience Spring 2014
- OCNG 491 Research Spring 2014
- GEOS 101 Limits to Life Fall 2014
- OCNG 420 Introduction Biological Oceanography Fall 2014
- GEOS 105 Introduction Environmental Geoscience Spring 2015
- OCNG 251 Oceanography Spring 2015
Terry L. Wade  
Interim Director of Geochemical and Environmental Research Group (GERG)  
Texas A&M University, 833 Graham Rd. College Station TX 77845  
http://gerg.tamu.edu

**A. PROFESSIONAL PREPARATION**

<table>
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<th>College/University</th>
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<td>Hartwick College</td>
<td>Chemistry</td>
<td>B.A., 1971</td>
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<td>University of Rhode Island</td>
<td>Chemical Oceanography</td>
<td>M.S., 1974</td>
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<tr>
<td>University of Rhode Island</td>
<td>Chemical Oceanography</td>
<td>Ph.D., 1978</td>
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**B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS**

- **2010-2013**  
  Interim Director of GERG, College of Geosciences, Texas A&M University
- **1998-Present**  
  Deputy Director, GERG, College of Geosciences, Texas A&M University
- **2001-Present**  
  Adjunct Professor, Department of Oceanography, Texas A&M University
- **1993-1998**  
  Associate Director, GERG, College of Geosciences, Texas A&M University

**C. RECENT PUBLICATIONS**


A. PROFESSIONAL PREPARATION

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<th>Degree &amp;Year</th>
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<td>University of Massachusetts</td>
<td>Chemistry</td>
<td>B.S., 1989</td>
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<td>University of Miami</td>
<td>Marine and Atmospheric Science</td>
<td>Ph.D., 1994</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

Dept. of Oceanography, Texas A&M University, College Station, TX: Associate Professor [09/2011 – present]
Dept. of Oceanography, Texas A&M University, College Station, TX: Assistant Professor [10/2004 – 08/2011]
DOC/NOAA/Atlantic Oceanographic and Meteorological Laboratory, Miami, FL: Research Chemist [08/1997 – 09/2004]

C. RECENT PUBLICATIONS


Tanhua, S. Tegtmeier, S. Turner, L. Wang, D. Wallace, J.


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOS 105 Intro Environmental Geoscience Spring 2011
OCNG 440 Intro to Chemical Oceanography Spring 2011
OCNG 440 Intro to Chemical Oceanography Spring 2012
OCNG 252 Oceanography Lab Fall 2012
GEOS 105 Intro Environmental Geoscience Spring 2013
ONCG 252 Oceanography Lab Spring 2013
OCNG 440 Intro to Chemical Oceanography Spring 2013
OCNG 491 Research Spring 2013
OCNG 252 Oceanography Lab Fall 2013
OCNG 491 Research Fall 2013
OCNG 440 Intro to Chemical Oceanography Spring 2014
OCNG 489 Maine Pollution Spring 2014
OCNG 491 Research Fall 2014
OCNG 291 Research Spring 2015
OCNG 350 Marine Pollution Spring 2015
OCNG 440 Intro to Chemical Engineering Spring 2015
OCNG 491 Research Spring 2015

Appendix K-295
Hongbin Zhan  
Endowed Ray C. Fish Professor  
Department of Geology and Geophysics, Mail Stop 3115, Texas A&M University, College Station, TX 77843-3115  
zhan@geos.tamu.edu

A. PROFESSIONAL PREPARATION

<table>
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<th>Degree &amp;Year</th>
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<td>University of Nevada</td>
<td>Physics</td>
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<tr>
<td>University of Science &amp; Technology Physics</td>
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<td>Ph.D., 1996</td>
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B. RECENT ACADEMIC/PROFESSIONAL APPOINTMENTS

1/2010- Present  
**Endowed Ray C. Fish Professor in Geology**, Department of Geology & Geophysics, Texas A&M University.

9/2007- Present  
**Professor**, Department of Geology & Geophysics, and Water Management and Hydrologic Sciences Graduate Program, Texas A&M University.

**Associate Professor**, Department of Geology & Geophysics, and Water Management and Hydrologic Sciences Graduate Program, Texas A&M University.

9/1996-9/2002  
**Assistant Professor**, Department of Geology & Geophysics, Texas A&M University.

C. RECENT PUBLICATIONS


D. COURSES TAUGHT RELEVANT TO ENGS OR ENST

GEOL 410 Hydrogeology Fall 2010
GEOG 410 Hydrogeology Fall 2011
GEOL 410 Hydrogeology Fall 2012
GEOL 410 Hydrogeology Spring 2013
GEOL 410 Hydrogeology Fall 2013
GEOL 491 Research Fall 2013
GEOL 410 Hydrogeology Spring 2014
GEOL 410 Hydrogeology Fall 2014
GEOL 410 Hydrogeology Fall 2014
### Appendix L: Student Demographics 2009-2015

#### Summary Spring 2009 20th Day ENGS

<table>
<thead>
<tr>
<th>Gender</th>
<th>n</th>
<th>mean</th>
<th>median</th>
<th>SD</th>
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<tbody>
<tr>
<td>Female</td>
<td>29</td>
<td>40.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>43</td>
<td>59.7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year Group</th>
<th>n</th>
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<th>median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1</td>
<td>11</td>
<td>15.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U2</td>
<td>14</td>
<td>19.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U3</td>
<td>28</td>
<td>38.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U4</td>
<td>19</td>
<td>26.4%</td>
<td></td>
<td></td>
</tr>
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<table>
<thead>
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<th>Ethnicity</th>
<th>n</th>
<th>mean</th>
<th>median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>55</td>
<td>76.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>12</td>
<td>16.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
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<table>
<thead>
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<th>First generation</th>
<th>n</th>
<th>mean</th>
<th>median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND</td>
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#### Summary Spring 2009 20th Day ENST

<table>
<thead>
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<th>median</th>
<th>SD</th>
</tr>
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<tbody>
<tr>
<td>Female</td>
<td>22</td>
<td>43.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>29</td>
<td>56.9%</td>
<td></td>
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<table>
<thead>
<tr>
<th>Year Group</th>
<th>n</th>
<th>mean</th>
<th>median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1</td>
<td>11</td>
<td>21.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U2</td>
<td>12</td>
<td>23.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U3</td>
<td>14</td>
<td>27.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U4</td>
<td>14</td>
<td>27.5%</td>
<td></td>
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<table>
<thead>
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<th>Ethnicity</th>
<th>n</th>
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<th>median</th>
<th>SD</th>
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<tr>
<td>White</td>
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<tr>
<td>Hispanic</td>
<td>7</td>
<td>13.7%</td>
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</tr>
<tr>
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<th>median</th>
<th>SD</th>
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<tr>
<td>ND</td>
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#### OVERALL

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<tr>
<td>Female</td>
<td>51</td>
<td>41.5%</td>
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</tr>
<tr>
<td>Male</td>
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<td>58.5%</td>
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<table>
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<th>n</th>
<th>mean</th>
<th>median</th>
<th>SD</th>
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<td>U1</td>
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<tr>
<td>U2</td>
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<td></td>
</tr>
<tr>
<td>U3</td>
<td>42</td>
<td>34.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U4</td>
<td>33</td>
<td>26.8%</td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>n</th>
<th>mean</th>
<th>median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>96</td>
<td>78.0%</td>
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</tr>
<tr>
<td>Hispanic</td>
<td>19</td>
<td>15.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1</td>
<td>0.8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First generation</th>
<th>n</th>
<th>mean</th>
<th>median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND</td>
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</table>

<table>
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<th>n</th>
<th>mean</th>
<th>median</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>TAMU GPA</td>
<td>109</td>
<td>2.81</td>
<td>2.81</td>
<td>0.61</td>
</tr>
<tr>
<td>HS %</td>
<td>91</td>
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<td>84</td>
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</tr>
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<td>SAT TOTAL</td>
<td>104</td>
<td>1,137.8</td>
<td>1,135</td>
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<tr>
<td>SAT V(read)</td>
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<td>561.8</td>
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<td>SAT M</td>
<td>104</td>
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<td>ACT Composite</td>
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<td>ND</td>
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### Summary Spring 2011 20th Day ENGS

<table>
<thead>
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<th>Category</th>
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<th>%</th>
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<th>%</th>
<th>Total</th>
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<td>22.5%</td>
<td>38</td>
</tr>
<tr>
<td>U2</td>
<td>29</td>
<td>24.2%</td>
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<td>77</td>
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<tr>
<td>U3</td>
<td>43</td>
<td>44.2%</td>
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</tr>
<tr>
<td>U4</td>
<td>1</td>
<td>0.8%</td>
<td>94</td>
<td>41.0%</td>
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<tr>
<td>White</td>
<td>95</td>
<td>79.2%</td>
<td>79</td>
<td>72.5%</td>
<td>174</td>
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<tr>
<td>Hispanic</td>
<td>14</td>
<td>11.7%</td>
<td>20</td>
<td>18.3%</td>
<td>34</td>
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<tr>
<td>Black</td>
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<td>3.7%</td>
<td>5</td>
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<tr>
<td>First generation</td>
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<td>60</td>
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<td>120</td>
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<td>2.883</td>
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<td>104</td>
<td>85.42</td>
<td>88.5</td>
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<tr>
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<td>1,192.71</td>
<td>1190</td>
<td>143.96</td>
</tr>
<tr>
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<td>585.23</td>
<td>570</td>
<td>79.80</td>
</tr>
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<td>SAT M</td>
<td>107</td>
<td>607.48</td>
<td>620</td>
<td>81.11</td>
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<tr>
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<td>55</td>
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### Summary Spring 2011 20th Day ENST

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Appendix L-300
### Summary Spring 2013 20th Day ENGS

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### Summary Spring 2013 20th Day ENST

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### U1, U2, U3, U4, U5 Distribution

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### Ethnic Distribution

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### First Generation Distribution

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### Summary Spring 2015 20th Day ENGS

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### Summary Spring 2015 20th Day ENST

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### Summary 2015 20th Day ENGGS

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### Appendix L-302
Fulltime Firsttime Headcount Retention/Graduation Rates, ENGS

(Retained/graduated from the same Major as initially enrolled)

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<th>Cohort_Year</th>
<th>Initial Cohort Count</th>
<th>1 - Yr Percent Retained within Major</th>
<th>1 - Yr Percent Graduated within Major</th>
<th>2 - Yr Percent Retained within Major</th>
<th>2 - Yr Percent Graduated within Major</th>
<th>3 - Yr Percent Retained within Major</th>
<th>3 - Yr Percent Graduated within Major</th>
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<th>4 - Yr Percent Graduated within Major</th>
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Fulltime Firsttime Headcount Retention/Graduation Rates, College of GE

(Retained/graduated from the same Major as initially enrolled)

<table>
<thead>
<tr>
<th>Cohort_Year</th>
<th>Initial Cohort Count</th>
<th>1 - Yr Percent Retained within Major</th>
<th>1 - Yr Percent Graduated within Major</th>
<th>2 - Yr Percent Retained within Major</th>
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### Fulltime Firsttime Headcount Retention/Graduation Rates, ENST
(Retained/graduated from the same Major as initially enrolled)

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<th>1 - Yr Percent Graduated within Major</th>
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</table>

### Fulltime Firsttime Headcount Retention/Graduation Rates, College of GE
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<tr>
<th>Cohort_Year</th>
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<th>2 - Yr Percent Graduated within Major</th>
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(Retained/graduated from the same Major as initially enrolled)

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### Fulltime Transfer Headcount Retention/Graduation Rates, College of GE
(Retained/graduated from the same Department as initially enrolled)

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### Fulltime Transfer Headcount Retention/Graduation Rates, ENST
(Retained/graduated from the same Major as initially enrolled)

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### Fulltime Transfer Headcount Retention/Graduation Rates, College of GE
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Appendix N: Exit Survey

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<tr>
<td>taught me appropriate field, laboratory and/or computation skills</td>
<td>56</td>
<td>75</td>
<td>11</td>
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<td>1</td>
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<tr>
<td>taught me effective oral communication skills</td>
<td>40</td>
<td>77</td>
<td>26</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>taught me effective written communication skills</td>
<td>58</td>
<td>69</td>
<td>17</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>has provided me with an understanding of the links between environmental science and public policy</td>
<td>58</td>
<td>66</td>
<td>17</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>has provided me with a considerable depth of knowledge about environmental science</td>
<td>77</td>
<td>55</td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>has provided me with an understanding of various branches of environmental social science</td>
<td>55</td>
<td>71</td>
<td>13</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>taught me to appreciate the ethical dimensions of environmental issues</td>
<td>66</td>
<td>62</td>
<td>12</td>
<td>2</td>
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<td></td>
</tr>
</tbody>
</table>
Appendix N-308

gave me hands-on research experience with faculty and/or grad students

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
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</thead>
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<tr>
<td>61</td>
<td>38</td>
<td>26</td>
<td>1</td>
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</table>

provided enough flexibility in my major to achieve my personal educational objectives

<table>
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<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
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<tbody>
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<td>69</td>
<td>65</td>
<td>7</td>
<td>3</td>
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</table>

was overall a positive experience

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>103</td>
<td>38</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Environmental Programs faculty...

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>challenged me</td>
<td>71</td>
<td>64</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>were accessible</td>
<td>89</td>
<td>48</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>seemed knowledgeable in their field</td>
<td>105</td>
<td>37</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My Faculty Mentor

Approximately how many times in total did you meet with your faculty mentor?

If you never met with your faculty mentor, please tell us why.

What would have made faculty mentoring more useful to you?

My Academic Advisor...

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>understood and effectively communicated curriculum, graduation requirements, and university and college policies and procedures.</td>
<td>126</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>listened to your thoughts, aspirations, concerns, and interests that helped define your academic, career, and personal goals.</td>
<td>117</td>
<td>20</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>assisted in creating an academic plan, selecting courses, and choosing possible minors that were consistent with those of your major.</td>
<td>120</td>
<td>16</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>was available to answer questions through office hours, scheduled meetings, email, or telephone.</td>
<td>127</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix N-309

provided me with information about educational opportunities outside of the classroom 92 38 10 1 1

Approximately how many times in total did you meet with your academic advisor?

If you never met with your academic advisor, please tell us why.

What would have made academic advising more useful to you?

Extra items and events

Strongly agree Agree Neutral Disagree Strongly disagree Not Applicable

I felt part of a community with the other students, faculty, and staff in the program 21 62 27 4 1

I benefited from the opportunity to network with other students at program hosted events. 29 41 37 6 3

The undergraduate events (tautage, Environment Café, etc) were enjoyable 27 41 31 1 9

The monthly newsletter had valuable information that kept me informed. 39 51 24 1

Were you a member of (circle all that apply)? EPIC GSA neither

What is your fondest memory of the program?

What is your worst memory of the program?

Strongly agree Agree Neutral Disagree Strongly disagree Not Applicable

I would choose this major if I were to start my undergraduate career over again. 63 53 20 4 2

Any other comments or suggestions for the Environmental Programs about the questions in this survey or those not included in this survey, including questions that should be included in the next survey:
Please indicate your level of agreement with the following by placing an “X” in the appropriate column:

<table>
<thead>
<tr>
<th>My education in the Environmental Programs at Texas A&amp;M...</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>prepared me for my future career</td>
<td>32</td>
<td>64</td>
<td>9</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>taught me to analyze/collect/interpret data</td>
<td>55</td>
<td>46</td>
<td>6</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>taught me to critically evaluate different sources of information</td>
<td>60</td>
<td>44</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>taught me appropriate field, laboratory and/or computation skills</td>
<td>38</td>
<td>51</td>
<td>16</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>taught me effective oral communication skills</td>
<td>35</td>
<td>52</td>
<td>14</td>
<td>5</td>
<td>1</td>
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</tr>
<tr>
<td>taught me effective written communication skills</td>
<td>51</td>
<td>46</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>has provided me with an understanding of the links between environmental science and public policy</td>
<td>65</td>
<td>39</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>has provided me with a considerable depth of knowledge about environmental science</td>
<td>59</td>
<td>45</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
has provided me with an understanding of various branches of environmental social science: 61 41 4 1 1

taught me to appreciate the ethical dimensions of environmental issues: 59 44 5

gave me hands-on research experience with faculty and/or grad students: 32 42 25 7 1 1

provided enough flexibility in my major to achieve my personal educational objectives: 54 43 8 3

was overall a positive experience: 77 29 2

**Environmental Programs faculty**

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>challenged me</td>
<td>49</td>
<td>53</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>were accessible</td>
<td>71</td>
<td>33</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

seemed knowledgeable in their field: 86 20 1

**My Faculty Mentor**

Approximately how many times in total did you meet with your faculty mentor?
If you never met with your faculty mentor, please tell us why.

What would have made faculty mentoring more useful to you?

<table>
<thead>
<tr>
<th>My Academic Advisor…</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>understood and effectively communicated curriculum, graduation requirements, and university and college policies and procedures.</td>
<td>98</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>listened to your thoughts, aspirations, concerns, and interests that helped define your academic, career, and personal goals.</td>
<td>91</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>assisted in creating an academic plan, selecting courses, and choosing possible minors that were consistent with those goals.</td>
<td>96</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix N-313

was available to answer questions through office hours, scheduled meetings, email, or telephone.

provided me with information about educational opportunities outside of the classroom.

Approximately how many times in total did you meet with your academic advisor?

If you never met with your academic advisor, please tell us why.

What would have made academic advising more useful to you?

I felt part of a community with the other students, faculty, and staff in the program.

I benefited from the opportunity to network with other students at program hosted events.

The undergraduate events (tailgate, Environment Café, etc) were enjoyable.
The monthly newsletter had valuable information that kept me informed.

Were you a member of (circle all that apply)? EPIC  GSA  neither

What is your fondest memory of the program?

What is your worst memory of the program?

I would choose this major if I were to start my undergraduate career over again.

Any other comments or suggestions for the Environmental Programs about the questions in this survey or those not included in this survey, including questions that should be included in the next survey:
Appendix O: Self-Reported Careers

Environmental Consulting 22% (22)
Company: Aqua-Tech Laboratories (1)
Company Description: Aqua-Tech Laboratories, with locations in Austin and Bryan Texas, is a NELAC accredited laboratory and provides biological and chemical analysis and testing services for soil and water samples.
Job Title & Description: Lab Technician – Test wastewater to ensure that it is environmentally safe to go back into the environment.
Website: http://www.aqua-techlabs.com

Company: Brown and Caldwell (1)
Company Description: Brown and Caldwell is the largest engineering consulting firm solely focused on the U.S. environmental sector. In a climate of tightening regulations, even tighter budgets and swift advances in technology to bridge the gap between compliance and funding, this focus has never been more important to our clients. It’s also important to our employees.
Job Titles & Descriptions: Scientist – N/A
Website: http://www.brownandcaldwell.com

Company: Consolidated Consulting Group (1)
Company Description: Consolidated Consulting Group, LLC (CCG) is a full service environmental consulting company providing the financial, industrial, commercial, insurance, legal and real estate communities with the highest quality standardized services and products available on a national basis. CCG is committed to providing the most cost-effective, timely and high quality environmental and property condition services in North America.
Job Title & Description: Environmental Scientist Phase II – Performs or oversees the implementation of project specific work, which includes: field work, scheduling, coordinating subcontractors and collecting samples.
Website: http://www.consolidatedconsulting.com

Company: DBR Engineering Consultants (1)
Company Description: N/A.
Job Title & Description: Sustainability Project Coordinator (LEED documentation; energy modeling)
Website: N/A

Company: Effective Environmental Inc. (1)
Company Description: Effective Environmental is a Full Service Environmental Company with Dedicated Employees and the equipment to handle every job. From one drum pickups, to multi million dollar Remediation and Disaster Relief Projects, Effective Environmental is the company that you can trust for all your Environmental Needs.
Job Title & Description: Field Tech II – Set up, review, and manage accounts that involve hazardous/non-hazardous waste pick up, removal, and lab packing.
Website: http://www.eff-env.com/content/index.html

Company: Environmental Resources Management (ERM) (3)
Company Description: Environmental Resources Management (ERM) is a leading global provider of environmental, health, safety, risk, social consulting services and sustainability
related services. We have more than 150 offices in over 40 countries and territories employing more than 5,000 people. ERM is committed to providing a service that is consistent, professional and of the highest quality to create value for our clients. Over the past three years we have worked for more than 50 per cent of the Global Fortune 500 delivering innovative solutions for business and selected government clients helping them understand and manage the sustainability challenges that the world is increasingly facing. For over 40 years we have been working with clients around the world and in diverse industry sectors to help them to understand and manage their environmental, health, safety, risk and social impacts. The key sectors we serve include Oil & Gas, Mining, Power, and Manufacturing, Chemical and Pharmaceutical. All face critical sustainability challenges and our clients in these and many other areas rely on our ability to assist them operate more sustainably which has a positive impact on our planet.

**Job Title & Description:** Consultant – Configuration, management and implementation of EMIS Applications for a global network of clients leveraging a wide breath of software packages with an emphasis on environmental compliance assurance, and change management modules.

Consultant – Participated in the ERM Global Mobility program by relocating to Calgary, Alberta. This was a career development opportunity to provide local support to ERM Sustainable Information Solutions (SIS) clients in the Calgary market. As ERM SIS continues to successfully leverage strategic partnerships with the leading enterprise software providers, including SAP, Enablon, and IHS, the ERM SIS initiative to establish a Center of Excellence in Calgary comes closer to realization.

EHS&S Consultant – Develop environmental compliance solutions with drafting system design documents, configure technical specifications, analyze/migrate data, and develop automated custom reporting functionality, Participate in system support and training documentation teams, and prepare/present training to internal consultants and client system users.


**Company:** Global Green USA (1)

**Company Description:** Global Green USA is the American affiliate of Green Cross International, founded by President Gorbachev, to foster a global value shift toward a sustainable and secure future. For 20 years, Global Green USA has been a national leader in advancing smart solutions to climate change that improve lives and protect our planet. We create transformative model projects and advance new policies that build sustainable and resilient communities and affordable housing. We help local governments, schools, and public agencies integrate sustainable design, clean energy, and water reduction measures. And we help people reduce waste, live better, and act more sustainably today--and in the future.

Global Green USA has influenced more than $20 billion dollars worth of building construction by encouraging the integration of green building and sustainability practices, and educates millions of people about climate-friendly solutions through its five annual events including the green Pre-Oscar Party. Our impact has been felt across the country, particularly in areas affected by disasters such as Hurricane Katrina in New Orleans where we led green rebuilding efforts and continue to provide assistance and resources to local residents.
**Job Title & Description:** Wetlands Coordinator – 40% of America's wetlands are located in Louisiana. Wetlands are a vital breeding ground and habitat for all types of wildlife, a buffer to storm surge from landfalling hurricanes, and enhance the local water quality. In Louisiana, 80% of wetlands are privately owned. The importance of my position is to facilitate landowners with all of the opportunities that are present to restore and protect their wetlands. Ultimately, the goal is to set up an economic incentive for landowners to maintain their wetlands via carbon markets. This requires plenty of outreach, relationship building, and research.

**Website:** http://www.globalgreen.org

**Company:** HDR Inc. (1)

**Company Description:** We specialize in engineering, architecture, environmental and construction services. While we are most well-known for adding beauty and structure to communities through high-performance buildings and smart infrastructure, we provide much more than that. We create an unshakable foundation for progress because our multidisciplinary teams also include scientists, economists, builders, analysts and artists.

**Job Title & Description:** Biologist – This position involves many facets of environmental work, but will initially focus on conducting wetland delineations mostly along the Texas Gulf Coast.

**Website:** http://www.hdrinc.com

**Company:** LandWorks, Inc. (1)

**Company Description:** LandWorks, Inc. is a provider of software, consulting and geographic information system (GIS) services. Our core business is providing land asset management and GIS solutions for a variety of industries including; oil and gas, mining, gas and electric utilities, telecommunications, pipeline, and transportation industries.

LandWorks' business is built on providing reliable solutions that combine leading-edge technologies with our extensive land-related business experience. We take pride in providing quality products and services that maximize our client's productivity and profitability, in a timely and cost-effective manner.

**Job Title & Description:** GIS Specialist – On site at ConocoPhillips since March 2012

**Website:** http://landworks.com

**Company:** Legacy Field Services (1)

**Company Description:** Legacy Field Services has the ability to provide quality and cost effective services in a safe manner to our customers is our number one priority. We strive that our vision, expertise and work ethic will promote teamwork with our clients and employees. Our staff includes some of the most experienced people in the industry and they are available to assist our customers in all aspects of plant, pipeline, compressor, pump and metering facilities. Legacy Field Services is an evolving business; in essence changing with the time to offer services that directly responds to the needs of our clients. Legacy Field Services has staff and resources available to design and manage projects of any size.

All our efforts are focused on a commitment to safety, quality and professional excellence. We are proud to have emerged as one of the top consulting firms, and continually strive to improve by adhering to our guiding principles. Our experienced staff is ready to assist you with your next project from inception to flowing gas.

**Job Title & Description:** Landman – N/A

**Website:** http://www.legacyfieldservices.com

Appendix O-317
Company: Metco Environmental (1)
Company Description: METCO Environmental (METCO) is an affiliate company of TestAmerica Analytical Testing Corp. and has been in the business of source testing and air quality studies since 1978. As one of the largest companies in the U.S. specializing in source emissions testing, METCO has served the full spectrum of industries, which include Refining, Petrochemical, Combustion and the Utilities. METCO is known nationally and internationally for high quality work and professional expertise. International projects have been conducted in South Korea, Germany, Venezuela, Guatemala, Israel, Puerto Rico, Malaysia, India and the U.S. Virgin Islands.
Job Title & Description: Environmental Scientist III – Quality air emissions testing for an assortment of clients such as: power plants, chemical plants, wood production plants, etc. Source testing for many elements such as Hg, CO2, CO, SO2, Particulate Matter, etc.
Website: http://www.metcoenv.com

Company: Navarro Research and Engineering (1)
Company Description: Navarro is a premier contractor providing high-quality technical services to DOE, NASA, and DOD. Navarro's success is based on our customer service focus and our well known responsiveness and innovation. In all we do, either in corporate management or in our services to our clients, we seek for the most effective and efficient approaches to provide best value to our clients.
Job Title & Description: Environmental Compliance Specialist – Maintain air, waste, and water compliance for the Johnson Space Center, Ellington Field, and Sonny Carter Training Facility. Co-wrote a new spill procedure which is used by anyone on the team responding to a spill at either JSC, Ellington Field, or Sonny Carter. Update sustainable spreadsheet for materials disposed of and recycled monthly. Organized a system for keeping track of all waste forms that are received at the waste chemical storage location.
Website: http://navarro-inc.com

Company: Partner Engineering & Science, Inc (1)
Company Description: Partner is a national environmental and engineering consulting firm focusing on real estate due diligence, providing Phase I environmental site assessments, property condition assessments, probable maximum loss reports, construction services, and environmental site mitigation and remediation.
Job Title & Description: Environmental Scientist – N/A
Website: http://www.partneresi.com

Company: Phase Engineering, Inc. (1)
Company Description: Phase Engineering, Inc., established in 1993, provides nationwide professional quality and timely Environmental Assessments, Compliance Audits and Property Condition Assessments for the real estate transactional and industrial communities performing over 1000 environmental site assessments and related services annually.
Job Title & Description: Client Services Manager – N/A
Website: http://www.phaseengineering.com

Company: Straughan Environmental, Inc. (1)
Company Description: Straughan Environmental provides high quality planning, engineering, and management solutions to government and commercial clients. We are a
dedicated team of expert engineers, planners and scientists whose collaborative approaches result in better outcomes for projects, people and the environment.

**Job Title & Description:** Compliance Specialist – Serve on JSC Environmental Services Contract supporting environmental compliance programs for NASA facilities. Fulfill role as member of emergency spill response team on the contract. Manage team consisting of 8 staff members that perform field operations tasks in Stormwater, Wastewater, Spill Prevention, Control, and Countermeasure, Industrial Solid Waste, and Air Quality media programs.

**Website:** http://www.straughanenvironmental.com

**Company:** SWCA Environmental Consultants (1)

**Company Description:** SWCA is an environmental firm that focuses on natural and cultural resource management, environmental planning, regulatory compliance, and sustainability services. Our continually expanding team of professionals combines scientific expertise with in-depth knowledge of permitting and compliance protocols to achieve technically sound, cost-effective solutions for a full spectrum of environmental projects throughout the U.S. and its territories.

**Job Title & Description:** Environmental Specialist – N/A

**Website:** http://www.swca.com

**Company:** Targus Associates, LLC (1)

**Company Description:** Targus Associates specializes in environmental due diligence services for acquisitions and financing of commercial real estate and related consulting services. Targus' professionals follow the due diligence process from inception through completion and, when environmental issues are encountered, can identify a path that leads the investor to an outcome that facilitates an acquisition geared toward a future exit strategy. Our mission is to assist our clients in protecting their investment of money and time in commercial real estate from the many risks that arise in business. The logo and the name Targus (from the Old English targa or Middle English targe, meaning shield) are constant reminders of our role in safeguarding our clients' assets and providing peace of mind.

**Job Title & Description:** Associate Professional – Environmental Consulting Firm for commercial real estate due diligence under ASTM-13. Also conducts additional services (asbestos sampling, lead-based paint XRF surveys, lead-in-drinking water sampling, HUD and TDHCA review, soil/groundwater sampling, soil vapor sampling, indoor air sampling, mold surveys, radon testing and much more.

**Website:** http://www.targusassociates.com

**Company:** Terracon (1)

**Company Description:** Terracon is a 100 percent employee-owned consulting engineering firm providing quality services to clients. Since 1965, Terracon has evolved into a successful multi-discipline firm specializing in: Environmental; Facilities; Geotechnical; Materials. Terracon provides services on thousands of environmental site assessment & geotechnical evaluation projects each year. Our culture, systems, and structure enable us to excel at both small and large projects. By combining our national resources with specific local area expertise, we consistently overcome obstacles and deliver the results our clients expect.

**Job Title & Description:** Field Geologist – N/A

**Website:** http://www.terracon.com
Company: TRC Companies, Inc. (1)
Company Description: A pioneer in groundbreaking scientific and engineering developments since the 1960s, TRC is a national engineering consulting and construction management firm providing integrated services to the energy, environmental and infrastructure markets. We serve a broad range of clients in government and industry, implementing complex projects from initial concept to operations. TRC is 3,000 technical professionals and support personnel at more than 100 offices throughout the U.S. Our clients depend on TRC's multidisciplinary teams to design solutions to their toughest business challenges in the energy, environmental and infrastructure markets. Through our continuing commitment to develop top talent, deepen our understanding of our clients' needs, and deliver sustainable solutions to the communities in which we live and work, we are tackling some of the most pressing energy, environmental and infrastructure challenges the world faces.
Job Title & Description: Geologist – Primary Role: Managing tasks and/or small projects from work plan and report preparation... Overall task coordination with limited supervision, coordinating and overseeing a variety of drilling / subsurface investigations, preparation of boring logs in accordance with USCS, installation of monitoring wells in accordance with applicable guidelines and providing fieldwork oversight of subcontractors. Using/understanding various field investigation techniques, interpreting laboratory analyses, waste characterization, human health screening criteria, interpretation of geologic and chemical data for surface water, soil, soil gas and groundwater, and prepare/complete various reports summarizing field procedures and results.
Website: http://www.trcsolutions.com

Company: W&M Environmental Group, LLC (2)
Company Description: W&M Environmental Group, LLC (W&M) is a Texas based consulting firm that has provided expert environmental services to a broad range of client since 1997. We specialize in real estate due diligence (assessment, remediation, and closure), Industrial Environmental Health & Safety (EHS), natural resources services, and Industrial Hygiene/Safety. GSA Schedule GS10F0014X. W&M’s professional staff is experienced with local, state, and federal government entities and provides clients professional quality, fair pricing, and prompt service. We have offices in Plano (Dallas), Austin, Houston San Antonio and Fort Worth, Texas.
Job Title & Description: Project Geologist/Project Manager – I work as a project manager for an environmental and engineering consulting firm that specializes in environmental investigation, remediation and closure, and compliance. Work load consists of Phase I & II ESAs, TCEQ Reporting, and some field work (groundwater and soil investigations). Environmental Consultant – Performed various field activities including Phase I Environmental Site Assessments (ESAs), groundwater monitoring, soil logging & sampling, remediation/construction oversight, pump and treat operations and maintenance (O&M), ambient air sampling. In addition to field activities, office responsibilities included data tabulation and evaluation, Affected Property Assessment Reports (APAR), Response Action Completion Reports (RACR), Response Action Plans (RAP), and various regulatory reports to the Texas Commission of Environmental Quality (TCEQ) and Railroad Commission of Texas (RRC).
Website: http://www.wh-m.com
Natural Resources 23% (23)

Company: AECOM (2)

Company Description: AECOM is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government.

Job Titles & Descriptions: Procurement Specialist – Work with Project Managers on a daily basis to ensure timely payment of invoices, address issues or concerns on a contract, acquire the necessary documentation to modify a sub-contract, run expense reports for the project, and to build trust worthy relationships with the PM.

Air Quality Scientist – Analyze and validate many types of data: criteria pollutants, meteorological parameters, gas chromatography, volatile organic compounds.

Website: http://www.aecom.com

Company: Anadarko Petroleum Corporation (1)

Company Description: Anadarko Petroleum Corporation is an American oil and gas exploration company and one of the world’s largest publicly traded oil and gas exploration and production companies, with approximately 2.86 billion barrels of oil equivalent (BOE) of proved reserves at year-end 2014.

Job Title & Description: HSE Representative/STX Drilling Operations – N/A

Website: http://www.anadarko.com

Company: Baker Hughes (3)

Company Description: Baker Hughes Incorporated (NYSE: BHI) creates value from oil and gas reservoirs with high-performance drilling, evaluation, completions and production technology and services, integrated operations and reservoir consulting. Our solutions are designed to lower costs, reduce risk or improve productivity for the global oil and gas industry.

Job Titles & Descriptions: Field Engineer: Stimulation – Supervise all engineering aspects of production enhancement jobs (hydraulic fracturing). Includes but is not limited to management of proppant and chemicals/fluids used during the job, writing job proposals and post job reports, designing jobs, and interacting with customers about current and future jobs.

Field Engineer: Data Engineer – Monitor drilling wells for borehole stability. We also provide drilling clients with information about the lithology and fluid content of the borehole while drilling.

HSE Environmental Affairs – Manage regulatory compliance project involving the creation of secondary containment guidelines and standards to promote consistency, provide flexibility and to allow for clear decision parameters to help facilities choose the appropriate secondary containment structure.

Website: http://www.bakerhughes.com

Company: BP (1)

Company Description: BP is one of the world's leading international oil and gas companies. We provide customers with fuel for transportation, energy for heat and light, lubricants to keep engines moving, and the petrochemicals products used to make everyday items as diverse as paints, clothes and packaging.
Job Titles & Descriptions: Environmental Compliance and Policy Advisor – Specialties: Advocacy, Permit analysis, Safety and Environmental Management Systems (SEMS), writing, environmental policy, policy analysis, energy, program design, program implementation, communication, reporting, environmental remediation, politics, problem solving, management
Website: https://www.bp.com

Company: Chevron (1)
Company Description: Chevron is one of the world's leading integrated energy companies. Our success is driven by our people and their commitment to get results the right way—by operating responsibly, executing with excellence, applying innovative technologies and capturing new opportunities for profitable growth. We are involved in virtually every facet of the energy industry. We explore for, produce and transport crude oil and natural gas; refine, market and distribute transportation fuels and lubricants; manufacture and sell petrochemical products; generate power and produce geothermal energy; invest in profitable renewable energy and energy efficiency solutions; and develop the energy resources of the future, including researching advanced biofuels.

Job Title & Description: Immigration Coordinator – N/A
Website: http://www.chevron.com

Company: Core Laboratories (1)
Company Description: Core Laboratories is a leading provider of proprietary and patented Reservoir Description, Production Enhancement, and Reservoir Management services. Core Laboratories' reservoir optimization technologies are used to increase total recovery from existing fields. Our services enable our clients to optimize reservoir performance and maximize hydrocarbon recovery from their producing fields. Core Laboratories has taken extensive measures to ensure the services and data provided by all of our worldwide companies are of the highest quality and integrity. Our commitment to applying and developing new technologies to optimize reservoir performance is unsurpassed in the oilfield service industry. This commitment to technology and to your bottom line makes Core Laboratories, The Reservoir Optimization Company™.

Job Title & Description: Core Analyst – Sample prep for fluid saturation (Dean Stark), porosity, and permeability (CMS) testing, conduct percussion and rotary sidewall analysis, trained crew of technicians in shale gas analysis, perform world-wide, well-site core processing and stabilization for Field Services division.
Website: http://www.corelab.com

Company: Diversified Projects Inc. (1)
Company Description: A Company of Project Managers, Engineers, Designers, and Construction Managers, Diversified Projects, Inc. (DPI) has been in business providing services to the Oil and Gas associated industry since incorporation in the state of Texas on February 28, 1985. DPI is a privately owned organization founded upon and maintaining the principles of being a service company to our associated industry. With over 30 years average experience, DPI Owners are full time active staff members who stay involved in day to day operations. Though traditionally organized, DPI encourages all staff and team members to think and act in the best interests of our projects or tasks given. Project Management at DPI will continue to direct work from a client perspective. DPI is a registered Board of Professional Engineering organization that has fulfilled the requirements of the State of
Texas to offer and perform engineering services. DPI has positive experience utilizing the plentiful engineering talent resource base in the Houston and surrounding areas.

**Job Title & Description:** Design Technician – The company designs oil and gas refineries using computer drafting programs. I made changes to the drawings wherever the engineers deemed it necessary and helped with anything else in the office.

**Website:** [http://www.dpitx.com](http://www.dpitx.com)

**Company:** DuPont (1)

**Company Description:** Our ten businesses are guided by three strategic priorities: Agriculture & Nutrition, Advanced Materials, and Bio-Based Industrials. We use our world-class science and global reach to help provide safe, sufficient food; ample, sustainable energy; and protection for people and the environment.

**Job Title & Description:** SHE Specialist: Environmental – N/A

**Website:** [http://www.dupont.com](http://www.dupont.com)

**Company:** Enterprise Products Operating LLC (1)

**Company Description:** Enterprise Products is one of the largest publicly-traded energy partnerships specializing in midstream energy networks, transportation, gathering, storage, processing, fractionation and terminaling, to producers and consumers of natural gas, natural gas liquids, crude oil, refined products, liquefied petroleum gases and petrochemicals.

**Job Title & Description:** Field Environmental Scientist – N/A

**Website:** [http://www.enterpriseproducts.com/index.asp](http://www.enterpriseproducts.com/index.asp)

**Company:** Express Energy Services (1)

**Company Description:** N/A.

**Job Title & Description:** HS & E manager – N/A

**Website:** N/A

**Company:** ExxonMobil (1)

**Company Description:** ExxonMobil, the largest publicly traded international oil and gas company, uses technology and innovation to help meet the world’s growing energy needs. We hold an industry-leading inventory of resources and are one of the world’s largest integrated refiners, marketers of petroleum products and chemical manufacturers.

**Job Title & Description:** Controller – N/A

**Website:** [http://corporate.exxonmobil.com](http://corporate.exxonmobil.com)

**Company:** Flint Hills Resources (1)

**Company Description:** Flint Hills Resources is an independent refining, chemicals, and biofuels and ingredients company. It strives to create value for its customers and society – through the way its facilities operate, its efficient use of resources, the products it produces and markets, and its involvement in its communities. The company, based in Wichita, Kan., has expanded its operations through capital projects and acquisitions worth more than $11 billion since 2002.

**Job Title & Description:** Environmental Engineer – working as the focal point on various environmental projects requiring Air and Water permitting with Local, State, and Federal agencies, Supported the facility by serving as a level 1 on-call emergency response contact, providing guidance, and reporting emissions estimated to be of or greater than reportable
quantities to air, water, or soil to various response centers. Worked as a hazardous waste coordinator for the refinery and completed the Annual Waste Summary, Toxic Release Inventory, and Spill Prevention Control and Countermeasures Plans as well as produced emission rate calculations to ensure compliance with air, water, and waste regulations. **Website:** https://www.fhr.com/default.aspx?AspxAutoDetectCookieSupport=1

**Company:** FMC Technologies (1)
**Company Description:** FMC Technologies, Inc. is the global market leader in subsea systems and a leading provider of technologies and services to the oil and gas industry. We help our customers overcome their most difficult challenges, such as improving shale and subsea infrastructures and operations to reduce cost, maintain uptime, and maximize oil and gas recovery. Named by Forbes® Magazine as one of the World’s Most Innovative Companies in 2013, the company has approximately 19,000 employees and operates 24 production facilities in 14 countries.

**Job Title & Description:** Commercial Analyst – N/A
**Website:** https://www.fmctechnologies.com

**Company:** Haliburton (2)
**Company Description:** Founded in 1919, Halliburton is one of the world's largest providers of products and services to the energy industry. With more than 70,000 employees, representing 140 nationalities in over 80 countries, the company serves the upstream oil and gas industry throughout the lifecycle of the reservoir - from locating hydrocarbons and managing geological data, to drilling and formation evaluation, well construction and completion, and optimizing production through the life of the field.

**Job Titles & Descriptions:** Associate Environmental Specialist – N/A
Technical Professional – N/A
**Website:** http://www.halliburton.com/en-US/default.page

**Company:** Marathon Oil Corporation (1)
**Company Description:** Marathon Oil Corporation (NYSE: MRO) is an independent global energy company. Based in Houston, Texas, the Company has activity in North America, Europe and Africa. The Company has three reportable operating segments, each of which is organized and managed based primarily upon geographic location and the nature of the products and services it offers. The three segments are as follows: North America Exploration and Production (E&P) - explores for, produces and markets liquid hydrocarbons and natural gas in North America; International E&P – explores for, produces and markets liquid hydrocarbons and natural gas outside of North America and produces and markets products manufactured from natural gas, such as liquefied natural gas (LNG) and methanol in Equatorial Guinea; Oil Sands Mining – mines, extracts and transports bitumen from oil sands deposits in Alberta, Canada, and upgrades the bitumen to produce and market synthetic crude oil and vacuum gas oil.

**Job Title & Description:** Regulatory Compliance Representative – Currently responsible for Regulatory guidance of Drilling/Completion operations within Marathon's Eagle Ford acreage, predominantly covering TRRC SWR 3: 8, 9, 10, 11/12, 13, 14, 36, 37, 38, 40, 46, 86 and Special Field rules. Successful planning, permitting, and execution of ~500 wells since 05/13. Additional responsibilities include: Annual P-5 renewal, Saltwater Disposal Well Permitting, T-4 Pipeline Permit Advising, Regulatory Lead for Field Rule Amendments Previous Responsibilities: Completion W-2/G-1 reporting & associated
documents, W-10/G-10 reporting, P&A Guidance/ Filing, T-4 Pipeline Permitting, Surface Commingling, Drilling/Completion H-9 Compliance
Website: http://www.marathonoil.com

Company: National Oilwell Varco (1)
Company Description: NOV Rig Systems makes and supports the world’s most advanced drilling solutions. At NOV Rig Systems, we are harnessing the strength of knowledge and innovation that is revolutionizing the future of energy. We build on what works, using our deep expertise to help minimize risk, increase uptime and improve performance in drilling operations around the globe.
Job Title & Description: Drilling Optimization Specialist – Remotely monitor and analyze drilling information to compare actual parameters performance to the optimization road map developed by Drilling Optimization Engineers. Identify deviations from expected trends and communicate drilling recommendations to client personnel on location. Consult with the DOE or RTTC supervisor as needed to resolve unexpected issues that require higher level of engineering support.
Website: https://www.nov.com

Company: NRG Energy (1)
Company Description: NRG is at the forefront of changing how people think about and use energy. Whether as one of the largest solar power developers in the country or by giving customers the latest tools to better manage their energy use, NRG is a pioneer in developing smarter energy choices. Our diverse power generating facilities have a capacity of over 50,000 megawatts, capable of supporting nearly 1/3 of the U.S. population. Our electricity providers serve nearly 3 million recurring retail customers. A Fortune 200 company, NRG supports clean energy resources and technologies critical to our transition to a sustainable, low carbon society. We built the nation's first privately-funded electric vehicle charging infrastructure and continue to create new, clean energy solutions for our customers.
Job Title & Description: ACP/BMF Multibrand Account Executive – N/A
Website: http://www.nrg.com

Company: One Subsea (1)
Company Description: OneSubsea delivers integrated solutions, products, systems and services for the subsea oil and gas market. Our company offers a step change in reservoir recovery for the subsea oil and gas industry through integration and optimization of the entire production system over the life of the field. OneSubsea leverages Cameron’s flow control expertise, process technologies and world-class manufacturing and aftermarket capabilities, along with Schlumberger’s petro-technical leadership, reservoir and production technology, and R&D capabilities. OneSubsea currently has more than 6,000 employees in over 23 countries operating in six divisions - Integrated Solutions, Production Systems, Processing Systems, Control Systems, Swivel and Marine Systems, and Subsea Services – that provide products and services to oil and gas operators around the world.
Job Title & Description: Subsea Project Coordinator – manage procurement, logistics, risk, mitigation strategies, cost and schedule of fabricating subsea distribution units.
Website: https://www.onesubsea.com
**Company:** Plains All American Pipeline (1)
**Company Description:** Plains All American Pipeline, L.P. (NYSE: PAA) is a publicly traded master limited partnership that provides midstream energy infrastructure and logistics services for crude oil, natural gas liquids ("NGL"), natural gas and refined products. PAA owns an extensive network of pipeline transportation, terminalling, storage and gathering assets in key crude oil and NGL producing basins and transportation corridors and at major market hubs in the United States and Canada. On average, PAA handles over 4 million barrels per day of crude oil and NGL on its transportation assets. PAA is headquartered in Houston, Texas.

**Job Title & Description:** Data Integration Specialist – N/A
**Website:** https://www.plainsallamerican.com

**Company:** ROSEN (1)
**Company Description:** We are a worldwide provider of cutting-edge solutions in all areas of the integrity process chain suiting a wide range of industries: Oil & Gas, Energy, Process, Mining, Manufacturing, Telecommunications and Transportation for a wide range of assets, including pipeline, tanks and vessels as well as wind turbines, trains, telecommunication towers and many more.

**Job Title & Description:** Client Lead-Data Analyst – N/A
**Website:** http://www.rosen-group.com

**Company:** Versa Integrity Group (1)
**Company Description:** Owensby & Kritkos (O&K) and Savoy Technical Services (STS) joined together via a transaction completed on Dec. 31, 2012. Prior to the original merger, O&K acquired Rope Access Technology (RAT) in August of 2012. The acquisition and merger joined three companies that bring the industry more than 70 years of NDE inspection, automated ultrasonic testing and high end evaluation capability, including: phased array, advanced ultrasonic technology, Time On Flight Diffraction, engineering and rope access. The combined companies will offer a full variety of inspection and maintenance repair capability that will be utilized in all facets of industrial, refining, chemical and offshore applications. The combination of the three companies provides customers a total of more than 400 engineers, API inspectors, rope access climbers and NDE technicians. Companies with current contracts with O&K and STS will find every one of VERSA’s managers, supervisors and support personnel are available to provide the same professional service they have been accustom to in the past.

**Job Title & Description:** SH&E Representative – Implement safety culture through consistent training, auditing, job site visits, ordering PPE, etc. and all administrative paperwork that goes with it.
**Website:** http://versaintegrity.com

**Government 19% (19)**
**Company:** Brazoria County District Attorney's Office (1)
**Company Description:** County Government Legal Counsel.

**Job Title & Description:** Misdemeanor Secretary – in charge of preparing the court dockets for one of the county courts, which involves pulling files, requesting information from Police departments, providing discovery for defense attorneys and while in court, preparing the plea paperwork before it goes to the judge.
**Website:** http://brazoria-county.com
Company: City of Dallas (3)
Company Description: Local government run programs and utilities for Dallas, TX.
GIS Support Technician – Reviews and approves Areas of Request in ArcGIS for zoning changes using metes and bounds descriptions, Works with city planners on general zoning changes, Planned Development Districts (PDDs), and Specific Use Permits (SUPs), Reviews ordinances before being sent to City Council, Produces zoning maps and custom city maps
GIS Support Technician – Address Coordinator – Maintain GIS and Posse system of addresses in an ArcSDE environment for the City of Dallas including the creation, deletion, and modification of address points (totaling over 400,000 points); Assist internal and external customers with historical address questions and research; Advise permitting and plans review staff with new address assignment, development of addressing plans for new and existing properties, and perform minor permit maintenance.
Website: http://dallascityhall.com/Pages/default.aspx

Company: City of San Antonio Department of Transportation and Capital Improvements (1)
Company Description: The Transportation & Capital Improvements (TCI) Department was created in January 2014. Under the leadership of City Engineer and Director Mike Frisbie, TCI consolidates the functions of the former Departments of Public Works and Capital Improvements Management Services. No services were lost in the consolidation and a transition is taking place to ensure smooth delivery of services to residents. As the transition continues, updates to the new TCI website and social media pages will continue to take place.
Job Title & Description: GIS Data Analyst – mapping out vegetation in the City of San Antonio the city is responsible for maintaining for budgetary reasons and conducting sidewalk condition assessments and maintaining the channel mowing inventory
Website: http://www.sanantonio.gov/TCI.aspx

Company: City of Sugar Land (1)
Company Description: Sugar Land is a full-service municipality providing the highest quality of affordable services to meet the needs of its citizens. Master-planned communities and welcoming neighborhoods enhance home values and create a sense of belonging. The community offers outstanding schools, libraries, civic organizations and other resources that make Sugar Land a great place to work, live and raise a family.
Job Title & Description: Water Resources Manager – N/A
Website: https://www.sugarlandtx.gov

Company: Environmental Protection Authority (1)
Company Description: The EPA is the government agency responsible for regulatory functions concerning New Zealand's environmental management. We administer applications for projects of national significance and the Emissions Trading Scheme. We regulate new organisms and hazardous substances, and activities in the Exclusive Economic Zone. We protect people and the environment by delivering robust, objective decisions on environmental matters, and ensuring compliance with rules. We actively work with others to
achieve good outcomes and recognise the unique relationship of Māori to the environment in our decision making.

**Job Title & Description:** Advisor for the EEZ Consenting Team - The EEZ Consenting Team was formed to evaluate and administer the marine consent process of the Exclusive Economic Zone and Extended Continental Shelf (Environmental Effects) Act. As an Advisor with this Team, I have been involved in evaluating impact assessments relating to a variety of offshore projects as well as working with both industry and the public to explain the marine consent process. I have also advanced my skills in project and relationship management while working with these groups as well as other government agencies.

**Website:** http://www.epa.govt.nz/Pages/default.aspx

**Company:** Flathead County Planning and Zoning (1)

**Company Description:** The Flathead County Planning & Zoning Office provides technical planning assistance to Flathead County. We are administered by the Board of County Commissioners. Our primary responsibilities include assisting in all facets of long range Community and Neighborhood planning, Zoning Administration and Subdivision Review. We also administer the Flathead County Lakeshore Protection Program and Flathead County Floodplain Program. Our staff is available to talk about any aspect of development occurring in Flathead County.

**Job Title & Description:** Planner I – N/A

**Website:** https://flathead.mt.gov/planning_zoning/

**Company:** State of Oregon (1)

**Company Description:** State government for Oregon. Oregon is a state in the Pacific Northwest region of the United States. It is located on the Pacific coast, with Washington to the north, California to the south, Nevada on the southeast and Idaho to the east. The Columbia and Snake rivers delineate much of Oregon’s northern and eastern boundaries, respectively. The area was inhabited by many indigenous tribes before the arrival of traders, explorers, and settlers who formed an autonomous government in Oregon Country in 1843. The Oregon Territory was created in 1848, and Oregon became the 33rd state on February 14, 1859.

**Job Title & Description:** Coastal State-Federal Relations Coordinator – Interpret and apply policies, regulations and standards of the Oregon Coastal Management Program (OCMP) to activities, policies, and programs of federal/state agencies that affect Oregon’s Coastal Zone.

**Website:** http://www.oregon.gov/pages/index.aspx

**Company:** Texas Commission on Environmental Quality (TCEQ) (6)

**Company Description:** The Texas Commission on Environmental Quality strives to protect our state’s public health and natural resources consistent with sustainable economic development. Our goal is clean air, clean water, and the safe management of waste.

**Job Titles & Descriptions:**

- **Environmental Investigator** – Conduct technical inspections, surveys, and follow-up investigations for complaints and compliance investigations of water quality entities; prepare reports which document field activities and observed conditions.
- **Environmental Investigator** – Ensure compliance with state and federal environmental regulations. I specifically deal with water issues including wastewater, water rights, public water supply, sludge and storm water.
- **Emissions Investigator** – N/A
Environmental Investigator – work on water quality and drinking water issues through the Office of Compliance and Enforcement.

Natural Resource Specialist I – Used SQL Developer along with the CCEDS and SDWIS databases to regularly track over 600 public water systems to review updates for possible EPA or TCEQ enforcement cases, Helped revamp the Lead and Copper program by changing all 5,300+ water systems to accurately reflect requirements found in 30 TAC and EPA regulatory standards, assisting water systems in understanding how to return to compliance, and ensured incoming sample data was accurate and complete. Responsible for researching and listing all information on behalf of the Drinking Water Quality team for numerous agenda items per each agenda held by TCEQ, Responsible for starting the Water Quality Parameter program from scratch to be presently operational on several major levels as well as for the foreseeable future.

Natural Resource Specialist – Performs routine work in the fields of air, water, and waste enforcement. Involves reviewing technical inspections, complaint investigations and technical reports. Researches noncompliance allegations and prepares documents to support routine enforcement actions. Organizes and conducts conferences with internal and external entities in order to settle enforcement matters. Additionally, participates in administrative and judicial hearings.

Website: http://www.tceq.state.tx.us

Company: Trinity River Authority of Texas (1)
Company Description: The Trinity River Authority’s mission is to promote conservation, reclamation, protection and development of the natural resources of the river basin for the benefit of the public. TRA's services have greatly improved public health and daily life in the communities we serve since our inception in 1955. Every day, we improve water quality in the Trinity River, and we remain poised at the forefront of new technologies and innovations that will allow us to continue our clean-water services for many years to come. Whether you're researching a school project, investigating business opportunities or looking for employment, we hope that you find this site interesting and informative, and that it augments your understanding of how important it is to wisely develop, use and conserve our greatest natural resource.

Job Title & Description: Protected Species Observer – N/A
Website: http://www.trinityra.org/

Company: United States Marine Corp (1)
Company Description: The Marine Corps has been America's expeditionary force in readiness since 1775. We are forward deployed to respond swiftly and aggressively in times of crisis. We are soldiers of the sea, providing forces and detachments to naval ships and shore operations. We are global leaders, developing expeditionary doctrine and innovations that set the example, and leading other countries' forces and agencies in multinational military operations. These unique capabilities make us "First to Fight," and our nation's first line of defense.

Job Title & Description: Rifleman – Proficient in operating weapons and equipment in ground combat operations. Duties include operating and maintaining weapons, such as rifles, machine guns, mortars, and hand grenades; locating, constructing, and camouflaging infantry positions and equipment; evaluating terrain and recording topographical information; operating and maintaining field communications equipment; assessing need for and directing
supporting fire; placing explosives and performing minesweeping activities on land; and participating in basic reconnaissance operations.

**Website:** http://www.marines.com/home

**Company:** US Department of State (1)

**Company Description:** The Department's mission is to shape and sustain a peaceful, prosperous, just, and democratic world and foster conditions for stability and progress for the benefit of the American people and people everywhere. This mission is shared with the USAID, ensuring we have a common path forward in partnership as we invest in the shared security and prosperity that will ultimately better prepare us for the challenges of tomorrow.

**Job Title & Description:** Fulbright Grantee – Collaborated with Malaysian educators and government officials to create cultural exchange projects. Navigated bureaucracies and cultural differences to achieve common goals with Malaysian colleagues. Planned and executed events focused on youth capacity-building and social empowerment.

**Website:** http://www.state.gov

**Company:** US Peace Corps (1)

**Company Description:** As the preeminent international service organization of the United States, the Peace Corps sends Americans abroad to tackle the most pressing needs of people around the world. Peace Corps Volunteers work at the grassroots level toward sustainable change that lives on long after their service—at the same time becoming global citizens and serving their country. When they return home, Volunteers bring their knowledge and experiences—and a global outlook—that enriches the lives of those around them.

**Job Title & Description:** Coastal Resource Management Extension Worker – Contributing to eco tourism development in my municipality including maintenance work on Marine Protected Areas, reviewing coastal ordinances, doing presentations for fisherfolk communities and in schools on a variety of environmental topics. Once I get dive certified I will also be helping with coral transplantation and reef assessments.

**Website:** http://www.peacecorps.gov

**Non-Profit or Education 21% (21)**

**Company:** The Beaver Watershed Alliance (1)

**Company Description:** The Beaver Watershed Alliance was formed in 2011 to establish programming to maintain high quality drinking water in Beaver Lake and improve water quality on the Beaver Lake Watershed. The Alliance represents a diverse stakeholder group from conservation, education, water utilities, technical and science, business, agriculture, recreation and local government groups working together for the cause of clean water.

**Job Title & Description:** Outreach Coordinator – provide outreach and education around water quality issues in Northwest Arkansas, coordinate education and volunteer events, and work with landowners to encourage and implement voluntary conservation practices on their property.

**Website:** http://www.beaverwatershedalliance.org

**Company:** Belton New Tech High (1)

**Company Description:** N/A

**Job Title & Description:** Physics Teacher – N/A

**Website:** N/A
Company: Brazos School for Inquiry and Creativity (1)
Company Description: The Brazos School for Inquiry & Creativity is a free, open-enrollment charter school accredited by the Texas Education Agency. We strive to meet the individual needs of each student through assessment, individualized educational plans, parental involvement, teacher collaboration and small group instruction. Teacher-student ratios are on the average 10-1. Each campus incorporates extensive use of Technology such as web-based instruction and on-site licenses for high quality, interactive learning. Teachers meet highly qualified standards for the State of Texas and Federal educational programs. On-going in service provides the teachers with technological skills, classroom management skills and methods of teaching. Three campuses enroll a total of 500 highly diverse students, grades PreK through 8th grade.
Job Title & Description: Teacher – 3rd and 4th Grade Math & Science, 7th and 8th Grade General Music
Website: http://www.thebrazosschool.org/southwest.html

Company: Donna ISD – Donna North High School (1)
Company Description: Four year Public High School accredited by the Texas Education Agency and the Southern Association of Colleges and Schools.
Job Title & Description: Biology Teacher – currently teach Biology to 9th graders and Science Completion to 11th and 12th graders, assist in creating curriculum for Biology and hopefully AP Environmental Science next year.
Website: http://dnhs.donna.schooldesk.net

Company: Florida State University, Higher Education and Student Affairs (1)
Company Description: One of the nation's elite research universities, Florida State University — with the Carnegie Foundation's highest designation, Doctoral/Research University-Extensive — offers a distinctive academic environment built on its cherished values and unique heritage, welcoming campus on the oldest continuous site of higher education in Florida, championship athletics, and prime location in the heart of the state capital. Combining traditional strength in the arts and humanities with recognized leadership in the sciences, Florida State University provides unmatched opportunities for students and faculty through challenging academics, cultural discovery and community interaction.
Job Title & Description: Graduate Student – After earning my masters, I hope to work in Outdoor Adventures/Education or in a Sustainability office on a college campus.
Website: https://www.fsu.edu

Company: Gerson Lehrman Group (1)
Company Description: GLG is driven by the curiosity of approximately 1,000 employees around the world who are transforming the way the top professionals share expertise and learn. Soon after its founding in 1998 GLG began connecting top professionals across fields and around the country. Over time, we became a membership of leading experts providing business decision-makers with insights to create better, more informed outcomes. Today, we are the world’s largest membership network for one-on-one professional learning, comprising more than 400,000 thought leaders and practitioners, including business leaders, scientists, academics, former public sector leaders and the foremost subject matter specialists. We serve users at more than 1,400 client companies in 40 countries. These clients
include Fortune 500 companies in nearly every sector and the leading professional services firms and financial institutions. GLG’s industry-leading compliance framework allows clients to learn in a structured, auditable, and transparent way, consistent with their own internal compliance obligations and the highest professional ethical standards. Our compliance standards are a major competitive differentiator and key component of the company’s culture. GLG is headquartered in New York with 22 offices globally and 1,000 employees.

Job Title & Description: Senior Research Associate – Establish and grow relationships with thought leaders suited to assist GLG clients with their research requests in the energy and industrials practice area.
Website: http://glg.it

Company: Heartline Ministries (Heartline Academy) (1)
Company Description: Heartline Ministries is a 501(c)(3) faith based organization formed to operate an orphanage, women’s program, and other programs in Port-au-Prince Haiti. The organization was established in September of 2000 to formalize the independent work of John & Beth McHoul, who are the founding directors of the organization. John & Beth McHoul have been working in Haiti since 1989.
Job Title & Description: Teacher – N/A
Website: http://heartlineministries.org/

Company: Integrated Ocean Drilling Program (1)
Company Description: The International Ocean Discovery Program (IODP) is an international marine research collaboration between 26 nations dedicated to advancing scientific understanding of Earth by sampling, instrumenting and monitoring subseafloor environments using specialized ocean drilling platforms staffed by multidisciplinary research scientists.
Job Title & Description: Curatorial Specialist – For each expedition, create a detailed sampling plan for each site/hole for all scientist's sample requests (on the ship and shore-based) that will be communicated and followed by all technicians onboard the ship
Website: http://www.iodp.org

Company: International Justice Mission (1)
Company Description: We’re now a global team of nearly 600 lawyers, social workers, investigators, community activists and other professionals. IJM field offices protect the poor from violence in nearly 20 communities throughout the developing world, with partner offices in Australia, Canada, Germany, the Netherlands and the UK sharing in the global mission. Through the support of a global movement of friends and partners, we have collaborated with local authorities to rescue thousands of victims of everyday violence and put hundreds of violent criminals behind bars.
And, each day, we see powerful proof that justice for the poor is possible.
Job Title & Description: Field Office Project Manager – Assist the IJM Guatemala field office in project design and management through developing and supporting the implementation of measurable, high-impact projects and programs.
Website: https://www.ijm.org
Company: McMaster University (1)
Company Description: At McMaster our purpose is the discovery, communication and preservation of knowledge. In our teaching, research and scholarship, we are committed to creativity, innovation and excellence. We value integrity, quality, inclusiveness and teamwork in everything we do. We inspire critical thinking, personal growth and a passion for lifelong learning. We serve the social, cultural and economic needs of our community and our society.
Job Title & Description: Doctoral Researcher – My work focuses on oil sands reclamation at the Utikuma Lake Research Study Area (URSA) in northern Alberta. There we are providing our industrial partners with an understanding of the hydrology and ecology of natural ecosystems in order to guide reclamation on oil sands leases. Over the last 15 years, research at Utikuma Lake Research Study Area has provided the most comprehensive understanding of watershed hydrology in the Boreal Plains and is currently being implemented in several reclamation strategies (e.g. Syncrude).
Website: http://www.mcmaster.ca

Company: Texas A&M University (7)
Company Description: Located in College Station, Texas, (about 90 miles northwest of Houston and within a two- to three-hour drive from Austin and Dallas), Texas A&M's main campus is home to over 55,000 students, with more than 436,000 former students worldwide.
Job Titles & Descriptions: Extension Program Specialist (AgriLife Extension Service) – Serve as program coordinator and instructor for the Texas Watershed Stewards (TWS) program, a watershed education program administered by the Texas A&M AgriLife Extension Service and Texas State Soil and Water Conservation Board in cooperation with other regulatory agencies. Education topics covered by the TWS program include, but are not limited to, hydrology/hydraulics, contaminant fate and transport, urban and agriculture land management practices, and environmental law/regulation.
Student Technician (Atmospheric Science Department) – Assist in field data acquisition, entry, and analysis - Use CIRAS-2 portable photosynthesis system in field, Gas chromatography using a flame ionization detector (FID)
Transit Operator – Provide a positive customer service experience and safe transportation to and from the Texas A&M campus to the surrounding community.
PhD Student (Department of Wildlife and Fisheries) – N/A
Graduate Research Assistant – N/A
Student Technician – N/A
Student Employment – Provide administrative assistance by answering phones, emails, and providing customer service to faculty and staff interested in attending Employee and Organizational Development Classes, act as registrar for classes, assist with the execution of classes and events.
Website: https://www.tamu.edu

Company: Texas811 (1)
Company Description: Texas811 is the national leader in underground damage prevention services. We are a non-profit, member directed corporation providing utility damage prevention services on behalf of over 1400 facility operator members. We serviced over two and a half million inbound ticket requests in 2014, from utilities, contractors, excavators and
homeowners, all needing to “know what’s below” before beginning a dig. We are one of the Dallas Morning News' Top 100 Places to Work in 2014, for the third year in a row.

**Job Title & Description:** GIS Technician – Routine maintenance, editing, plotting and conversion of spatial data. Provide research for past or current GIS maintained data. Perform quality assurance/quality control on department specific GIS data.

**Website:** http://www.texas811.org

**Company:** The George Washington University (1)

**Company Description:** Our University actively engages Washington, D.C., and the world. Our location in the heart of Washington places us at the core of U.S. government, policy and law. We sit where the worlds of science, technology, media and the arts converge. Our students and faculty have the unparalleled opportunity to study and work alongside leaders and practitioners in every discipline, to take part in the interchanges that shape our community and the world.

**Job Title & Description:** Student – in Law School

**Website:** http://www.gwu.edu

**Company:** University of Alabama (1)

**Company Description:** The University of Alabama is a student-centered research university and an academic community united in its commitment to enhancing the quality of life for all Alabamians.

Founded in 1831 as Alabama's first public college, The University of Alabama is dedicated to excellence in teaching, research and service. We provide a creative, nurturing campus environment where our students can become the best individuals possible, can learn from the best and brightest faculty, and can make a positive difference in the community, the state and the world.

The University of Alabama family has always expected great things. After all, we are our state’s flagship university — the Capstone of higher education.

**Job Title & Description:** Graduate Teaching Assistant – N/A

**Website:** https://www.ua.edu

**Company:** University of Calgary (1)

**Company Description:** The University of Calgary is Canada’s leading next-generation university – a living, growing and youthful institution that embraces change and opportunity with a can-do attitude. Located in the nation’s most enterprising city, the university has a clear strategic direction – Eyes High – to become one of Canada’s top five research universities by 2016, grounded in innovative learning and teaching and fully integrated with the community of Calgary.

**Job Title & Description:** Program Assistant – Implement two programs aimed at building academic skills for University of Calgary Students: My First Six Weeks (first year students only) and Skills for Success. Supervise Peer Helpers in the Student Success Centre.

**Website:** http://www.ucalgary.ca

**Company:** Washington State University (1)

**Company Description:** Washington State University is a top-tier research university. Founded in 1890 as Washington’s original land-grant university 11 colleges that foster scholarly achievement Graduate and professional programs that attract top minds from 88 countries 10 National Academy members.
Job Title & Description: **Graduate Research Assistant** – N/A
Website: https://wsu.edu

**Services, Information, and Media 15% (15)**
Company: Cargill (1)
Company Description: Cargill provides food, agriculture, financial and industrial products and services to the world. Together with farmers, customers, governments and communities, we help people thrive by applying our insights and 150 years of experience. We have 152,000 employees in 67 countries who are committed to feeding the world in a responsible way, reducing environmental impact and improving the communities where we live and work.

Job Title & Description: **Senior Government Affairs & Policy Associate** – N/A
Website: http://www.cargill.com

Company: ClearC2, Inc. (1)
Company Description: ClearC2, Inc. (ClearC2) is a Premier IBM Business Partner that develops applications for today’s changing business world. ClearC2 was founded in 1993 and is a leading IBM Independent Software Vendor focused on driving customer loyalty. It is a privately-held and employee-owned company. All facets of our business offerings are performed directly by our employees – there is no outsourcing or contracting with any 3rd party vendors or system integrators. Our main location can be found in Coppell, Texas, just outside of Dallas. This facility is where all research and development, support, implementation, and SaaS hosting is performed. ClearC2 has developed C2CRM, a browser-based CRM solution, to help companies of all sizes improve productivity, save costs, increase sales and profits, and build strong customer relationships. In 2002, IBM and ClearC2 announced a Strategic Alliance making C2CRM IBM’s primary CRM offering for its middle market customers. C2CRM consists of several modules that span five solution sets: Relationship Management, Sales Management, Customer Service, Marketing Management and Business Intelligence. These comprehensive modules allow companies the ability to scale the application based on needs and number of users.
In 2008, ClearC2 developed C2MMS, a Maintenance Management Suite solution. It allows companies to be in control of their scheduled maintenance, vendor repairs, work orders, RMA processing, security and audit processing, equipment inventory and on call management.

Job Title & Description: **Customer Support and QA Analyst** – N/A
Website: http://clearc2.com

Company: Dh 2004 Interest, L.P. (1)
Company Description: N/A
Job Title & Description: **Financial Manager** – N/A
Website: N/A

Company: Elektra Investments LLC (1)
Company Description: At Elektra Investments, we strive to be exceptional in every way. Whether it be our homes for lease or our prompt and personal service, we make sure you are getting your money's worth. If you are building and have sold your home sooner than
expected or are new to town and would like to acclimate before purchasing, we have a hearth and a home for you.

**Job Title & Description:** President/Sponsoring Broker – Manage daily and monthly operations for $615,000 in rental assets by implementing automated systems and facilitating tenant/contractor requests and communications, Allocate revenue exceeding $77,000 in annual volume that maintains cash flow/reserves and satisfies debt service, Advertise vacancies through multiple listing sites and secure qualified tenants to maintain full capacity while preserving the integrity of facilities and increasing revenue stream, Negotiated over 50 leases for 1-4 family properties with prudent terms and integrated risk management

**Website:** [http://www.elektrainvestments.com](http://www.elektrainvestments.com)

**Company:** Hilton Worldwide (1)

**Company Description:** As the most recognized name in the industry, travelers all over the world have been saying “Take me to the Hilton” for almost a century. And because of our innovative approach to products, amenities and service, Hilton continues to be synonymous with hotel across the globe. Hilton Hotels & Resorts remains the stylish, forward thinking global leader of hospitality – and we help make traveling easier with our smart design, innovative restaurant concepts, authentic hospitality and commitment to the global community.

**Job Title & Description:** Revenue Coordinator – Knowledgeable of Hilton’s current reservations and GDS systems including ONQ R&I, Horizon, Cognos, Journey, PIM, Lanyon, HOD Control, Amadeus, Apollo, Sabre, Worldspan, FMS, RMS and various Web Forms.


**Company:** LyondellBasell (1)

**Company Description:** As one of the world’s premier plastics, chemicals and refining companies, LyondellBasell produces materials that are essential to shaping what comes next – in electronics, food packaging, construction materials, automotive components, motor fuels, textiles, medical supplies and more.

**Job Title & Description:** Supply Chain Associate (Polymers Pricing) – N/A

**Website:** [http://www.lyondellbasell.com/Home/index.htm](http://www.lyondellbasell.com/Home/index.htm)

**Company:** One Stop Green, LLC (1)

**Company Description:** OneStopGreen offers energy efficient products and services for your home, business, or commercial property. Our goal is to provide practical, long-term, and economical solutions for existing inefficiencies in your present system(s), in the most user-friendly way possible. Take control of your energy options so you can: reduce your carbon footprint & do your part for the environment; protect yourself against rising energy costs; save money by purchasing less energy from "The Grid"; take advantage of valuable Federal tax credits and deductions; earn money by investing in hard assets that create renewable energy; get the facts on the savings our solutions will generate.

**Job Title & Description:** Landman – Facilitate environmentally friendly improvements to residential and commercial properties through distribution of green, energy efficient equipment. One Stop Green offers every product needed for sustainable energy independence; enabling homeowners, businesses and commercial property owners to master their usage by reducing waste, producing renewable energy from within, and implementing efficient energy consumption methods. Our goal is to provide user friendly and practical
long-term solutions to existing inefficiencies in your present system(s). Our carefully selected products and professional installers offer a higher level of satisfaction and service for our customers.

**Website:** http://www.onestopgreen.com

**Company:** PepsiCo (1)
**Company Description:** PepsiCo is a global food and beverage leader with net revenues of more than $65 billion and a product portfolio that includes 22 brands that generate more than $1 billion each in annual retail sales. Our main businesses – Quaker, Tropicana, Gatorade, Frito-Lay and Pepsi-Cola – make hundreds of enjoyable foods and beverages that are loved throughout the world. PepsiCo's people are united by our unique commitment to sustainable growth by investing in a healthier future for people and our planet, which we believe also means a more successful future for PepsiCo. We call this commitment Performance with Purpose: PepsiCo's promise to provide a wide range of foods and beverages from treats to healthy eats; to find innovative ways to minimize our impact on the environment by conserving energy and water and reducing packaging volume; to provide a great workplace for our associates; and to respect, support and invest in the local communities where we operate.

**Job Title & Description:** EHS Systems Analyst – N/A

**Website:** http://www.pepsi.com

**Company:** Rockwell Collins (1)
**Company Description:** For more than 75 years, our customers have depended on us to provide innovative communication and aviation electronics solutions to solve their toughest challenges. We have been there with them from the early days of flight, to the exploration of space, to enabling battlespace interoperability and advancing commercial aerospace. Delivering on our promises, we continue to build trust every day. With an extensive range of communication and aviation electronic solutions, coupled with a heritage of innovation, Rockwell Collins helps commercial and government customers succeed.

**Job Title & Description:** Senior Flight Planning Coordinator – Operate various computer applications/flight planning engines including Flight Manager, SkyPlan, EDS, Jeppesen, and Airline Direct Read and interpret en-route Jeppesen aviation charts. Prepare and deliver world-wide flight plans. File and uplink operational flight plans. Advise clients in their trip-planning process. Maintain individual client aircraft database.

**Website:** http://www.rockwellcollins.com

**Company:** Sabre Commercial Inc. (1)
**Company Description:** Sabre Commercial, Inc., based in Austin, Texas, is a commercial construction services company specializing in general contracting. Sabre was formed out of a belief in reputation, integrity and responsibility. Sabre has the team to effectively provide general contracting services for all your commercial construction needs with our well rounded group of experienced contractors always striving to provide our clients with the best service possible.

**Job Title & Description:** Project Coordinator – Coordinate with architects, engineers, owners, and subcontractors on a daily basis. Review plans and specifications in order to procure materials through the submittal and RFI process. As part of the Sabre Commercial Healthcare Team, I have worked on over 30 project with clients like Seton, Urology Austin, and St David's Healthcare.

**Website:** http://www.sabrecommercial.com

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Company: Scripps Health (1)
Company Description: Scripps is a private, nonprofit, integrated health system in San Diego, California committed to providing the highest quality care to you and your family. Whether you are looking for some of the best doctors in San Diego or need care at one of our top-ranked hospitals, Scripps offers excellent medical care as well as preventive services and wellness screenings for every stage of life.
Job Title & Description: Lab Assistant/Phlebotomist – N/A
Website: http://www.scripps.org

Company: Southwest Airlines (1)
Company Description: Based on the U.S. Department of Transportation’s most recent data, we’re the nation’s largest carrier in terms of originating domestic passengers boarded. We operate an all-Boeing fleet (the largest in the world!), the majority of which are equipped with satellite-based Wi-Fi providing gate-to-gate connectivity while over the United States. That connectivity enables Customers to use their personal devices to enjoy streaming music provided by Apple Music or to view on-demand movies and television shows, as well as nearly 20 channels of free, live TV compliments of our valued Partners!
Job Title & Description: Environmental Specialist – N/A
Website: https://www.southwest.com

Company: Talley Landscape Architects, Inc. (1)
Company Description: Talley Landscape Architects, Inc. is a full service landscape architecture firm engaged in the planning, design, and construction management of large scale public projects such as parks and recreation facilities. The firm has also led teams providing complete design services for a number of master-planned communities, and prepared several comprehensive parks master plans for Municipal Utility Districts in preparation for park bond sales. TLA is uniquely qualified to consult on projects involving a wide range of stakeholders with multiple priorities. They are often sought after as a facilitator in creating a practical vision for public agencies, non-profit and philanthropic entities, as well as corporate clients.
Job Title & Description: Intern/Environmental Project Coordinator – assist in master-planning and contracting for sustainable landscape designs; help develop marketing tools for the firm; compiled research on new designs to present to clients.
Website: http://www.talleyla.com/cgi-bin/homepage

Company: The Sexton Group, LLC (1)
Company Description: The Sexton Group's basic strength is to source, identify and recruit qualified candidates for our client's requirements within the Oil & Gas industry. Our values consist of a desire to be a top recruiting firm with a passion for excellence and integrity.
Job Title & Description: Recruiter – Partner with large operators, E&P's and privately held companies to assist with their recruitment efforts in order to expand their operations. Maintain relationship with clients by attending meetings to better coordinate efforts to ensure optimum recruitment efforts on high priority positions. Ability to recruit on a multitude of roles including: Geosciences, HSE, Landman, Engineering/ Advisor level
positions & Wireline operations. Successfully placed candidates with Clients ranging from Independents, E&P’s and Major Operators.

**Website:** http://www.thesextongroup.org (server not found) linkedin: https://www.linkedin.com/company/the-sexton-group-llc

**Company:** UPS Supply Chain Solutions (1)

**Company Description:** The vast array of services and industry solutions available from UPS Supply Chain Solutions can be your competitive edge.

Transportation and Freight - Extend your business reach by leveraging UPS’s global transportation network. Contract Logistics - A single-source solution to meet your logistics and supply chain needs, from global distribution to post-sales service parts logistics.

Customs Brokerage - Our customs-specific knowledge and expertise can help simplify the complexities of international trade management, from world-class customs brokerage to compliance consulting and managed services. Consulting Services - Real-world strategic direction and counsel that help companies align their supply chain operations with their business strategies. Industry Solutions - Choose an industry-specific problem, and UPS Supply Chain Solutions can provide the solution. We have proven experience in automotive, consumer goods, government, healthcare, high tech, industrial manufacturing, retail, and many other industries.

**Job Title & Description:** Customs Brokerage Representative – Apply HTS codes for accurate duty assessment, and ensure all federal & OGA requirements are met

**Website:** https://www.ups-scs.com

**Company:** VendorLogix LLC (1)

**Company Description:** As a national Microsoft-focused IT consulting company, Vendorlogix LLC provides application development, enterprise solutions and infrastructure services.

**Job Title & Description:** Microsoft Consultant – We assist customers across the US in every industry by providing the insight and expertise required in the ever changing Microsoft world to obtain the maximum discounts on their Microsoft Enterprise Agreements. Our goal is for our customers to reduce costs without ever sacrificing IT initiatives.

**Website:** http://www.vendorlogix.com