

# **Preparing Students for the Environmental Workforce**

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## **Abstract**

*One of the challenges of designing curricula in environmental programs is finding ways to cover the social, scientific, and communication content needed by professionals in the field. The authors describe a sequence of writing, critical thinking, and civic engagement experiences during the junior and senior years. Students practice communicating across disciplines and stakeholder groups while learning about the complex environment of the Chesapeake Bay and surrounding watershed and preparing for environmental careers.*

Metropolitan Baltimore is shaped, geographically and culturally, by the Chesapeake Bay. For those of us who grew up in different locations, it can be difficult to appreciate the role the Bay plays in the life of Maryland—whole communities were founded on harvesting or enjoying the bounty of the Bay. The Bay serves as an icon of all that is encompassed in the terms “home,” “beauty,” “delight,” and “nature.” Yet, the enduring beauty of the land and water blinds many people to the extent of the Bay’s decline. The tourists at Baltimore’s Inner Harbor or on the Eastern Shore admire the views, but do not typically realize that the water should run clear to its shallow floor, or that much of the Bay floor should be covered with submerged grasses.

Many students come to the Environmental Science and Studies (ESS) major at Towson University because of attachment to and concern about “their” Chesapeake Bay. Our students value the Bay, know that the Bay is in trouble, and are eager for jobs that will let them contribute to minimizing or reversing these problems, but there are great gaps between their good intentions and the knowledge and skills required to make significant environmental progress. There are other, more serious, gaps as well: Bay citizens and stakeholders, including scientists, lawmakers, harvesters of the Bay, and local industries, have long disputed how natural resources should be allocated and most effectively maintained (Keiner 2009).

If students expect to succeed in changing behaviors or shaping policy, they need to develop a reasoned understanding of how scientific principles, community values, and funding availability shape opportunities and simultaneously present obstacles to sustainable change. They must learn how to assess which environmental interventions a given community will accept as reasonable rather than burdensome, and consider how those interventions can be sustained in a world where funding is scarce (and likely to become scarcer). In this article, we will describe how the Environmental Science and Studies Program (ESS) at Towson helps students reach these intellectual goals. We will provide an overview of the program design, then focus on the activities in the Bay Writing course, the senior year seminar, and the environmental internship

courses. These experiences connect the students to their campus, the local metropolitan area, and the impact that human activities have on “their” Chesapeake Bay.

## Multidisciplinary Approach

At Towson University we offer a multidisciplinary academic environmental program that prepares students to become skillful environmental problem-solvers who can negotiate the complex social relations among stakeholders in the watershed. Our program integrates interdisciplinary learning and civic engagement, with a strong emphasis on writing and thinking skills to teach students how to examine current environmental problems and propose realistic approaches for exploring and analyzing them further. The ESS program was developed in 1998 during the second national surge of environmental science program development (Romero and Silveri 2006). It was designed to educate future environmental professionals to address regional environmental issues/problems as defined by members of the local community (governmental agencies, not-for-profits, industry, etc.). Our curriculum offers a broad, interdisciplinary program incorporating the “primary” disciplines and allowing students to develop the fundamental scientific, technical, and social knowledge they will need to assess, plan, and evaluate environmental problems—particularly those confronting metropolitan regions such as Baltimore. But learning about the “systems” and the “problems” is not sufficient—our students also need to develop a range of intellectual tools including critical thinking, problem-solving, understanding the needs and goals of competing interest groups, and effective writing for a wide variety of audiences and contexts. Along the way, we want our students to recognize that much of environmental work—time, effort, and research—takes place in the human community rather than in labs and nature preserves. Only with buy-in from ordinary citizens will environmental progress be possible and sustainable (Martin 2008).

The program was developed as a joint initiative of the deans of the College of Liberal Arts and the College of Science and Mathematics, who wished to integrate curricular components of those colleges supplemented by offerings from the College of Health Professions and the College of Business and Economics. A program director was hired soon after to facilitate implementation and recruiting. As conceived and executed, the new academic program required very little in the way of additional resources, drawing on the existing strengths of the institution.

Environmental programs are often criticized as being overly shallow, providing students only a very superficial exposure to a broad range of fields. The breadth of potential disciplines with environmental relevance suggests that no graduate can be well versed in all possible disciplines (Romero and Silveri 2006; Vincent and Focht 2009). Our approach has been to create a demanding major that provides for both depth within specific areas and contextual breadth so that our graduates develop skill sets appropriate to the workplace and understand the context in which these skills need to be applied. The curricular and administrative structure of our program is atypical (Focht, personal communication) but has been quite successful for the majors and the businesses, agencies, and organizations into which these students move upon graduation. The success of our graduates in the workplace strongly suggests that we are doing “something right” and that

we are producing graduates who have a functionally integrated suite of skills, knowledge, and abilities that enables them to effectively address environmental problems.

## Academic Structure of the ESS program

Our majors choose one of two concentrations, Environmental Science or Environmental Studies. While there are some minor differences in breadth requirements between the concentrations, a typical student majoring in ESS can be found taking introductory course work in geology, biology, chemistry, mathematics, geography, environmental health, environmental ethics, economics, and political science (<http://www.towson.edu/ess>). Every student also selects a track within their concentration that takes them more deeply into an area of specialization (see Table 1 for a list of tracks). Classes are taught by faculty members from the primary disciplines who are expert in their fields (i.e., humanities, geography, economics, sociology, etc.). Many of these courses cover issues related to the urban/rural gradient that surrounds Towson University and greatly impacts the Chesapeake Bay. This gradient is especially relevant to students who are from this area and whose concerns about the local environment have brought them into the major.

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**Table 1. A schematic presentation of the Environmental Science and Studies Program at Towson University.**

### Tracks

#### Environmental Science Tracks

- Environmental Biology Track
- Environmental Chemistry Track
- Environmental Geology Track
- Environmental Science Track

#### Environmental Studies Tracks

- Environmental Geographical Analysis Track
- Environmental Policy/Management Track
- Environmental Health Track
- Directed Environmental Studies Track
- Informal Environmental Education

#### Advanced/Capstone Courses

- Writing class [Chesapeake Bay and Its Watershed]
- Senior seminar
- Environmental Internship
- Environmental Research

#### Introductory and “breadth” courses

- Courses that serve as the prerequisite courses for the upper level course in the tracks

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The range of courses involves nearly fifty faculty members, representing four colleges at Towson University. Faculty members generally enjoy having ESS students in their classes in addition to their traditional majors since the ESS students' perspectives create a more complex and interesting learning environment. From the student perspective what makes this program successful is that they are provided with multiple ways to explore and to act on what already interests them. Assignments throughout the program provide them with the appropriate intellectual tools—critical thinking, problem-solving, writing in a variety of contexts—and leave little doubt that what is taught in the classroom genuinely represents what will be needed in the field.

Becoming effective environmental professionals requires students to do more than accumulate knowledge and research techniques. They must be prepared to work across disciplines and reach out to communities that (at least initially) do not necessarily share their values. They need to communicate in writing and speech, translating across vocabularies and preconceived notions and promoting collaboration across interest groups. Gaining sufficient consensus across those groups to promote successful, sustainable environmental change involves

- identifying shared problems
- understanding existing community values and their views of the issues
- identifying what is scientifically, technologically, and socially feasible
- establishing shared goals with stakeholders
- helping the community make plans rather than making plans for the community
- communicating shared goals and planned activities in a way that helps stakeholders work together in a sustainable way

## **Integrating Content, Methodology, and Communication in the Bay Writing Class**

The flexibility of the ESS program does pose some intellectual challenges for the students as they begin their upper-level, ESS-specific classes. Initially, the upper-level courses consisted of a senior seminar, an environmental internship, and environmental research. While these courses generally served the integrative purpose quite well, they also represented the first time most of the students were called upon to integrate their wide-ranging contextual courses. The students were also now face-to-face with their future professional colleagues: rather than being one of the few ESS students in a room full of geographers, ecologists, or economists, they were all ESS students together, and needed to be able to work effectively together.

In order to provide a smoother transition to the thinking and writing tasks of capstone experiences and professional life beyond the university, and to bring the majors together before their senior year, an environmentally focused advanced writing course (commonly known as the Bay Writing course) was added to the curriculum. The Bay Writing course provides a place for students to practice real-world writing tasks, integrate information, and foster group cohesiveness in preparation for their future entry into the workforce. Connecting students with the disciplinary communities they wish to join is a traditional goal in upper-level writing courses. However, as is made clear by the range of courses the ESS students have taken up to this point, there isn't one unified community for them to join, nor is there one primary style of discourse that will work for all the audiences they hope to reach with their work. So one of the course goals is to prepare students for multiple kinds of communication with multiple—and often conflicting—audiences, and we balance those multiplicities with a single topic: the Chesapeake Bay.

The Bay acts as a marvelous rhetorical lens: it simultaneously focuses students' attention on a topic they already wanted to study, and provides a wide range of difficult social,

economic, and scientific problems—each with a variety of passionate interest groups. Watermen, tourists, ecologists, politicians, home owners, recreational boaters, commercial fishermen, developers, and regulators will likely have strong opinions on any recommendations students want to make. Add to this mix the students' vocational goals of finding internships, scholarships, and jobs, and perhaps gaining admission to graduate school, and there are more than enough real-world writing scenarios to fill a semester.

Junior-year writing courses are not in themselves unusual. Writing across the curriculum or writing in the disciplines programs have existed in U.S. colleges and universities since the 1970s, and Towson University had a nationally recognized writing across the curriculum program for many years (Walvoord et al. 1997). Upper-level writing courses are supposed to connect techniques for effective communication with the research methods and conventions of particular majors. As such, it's philosophically best for them to be taught by discipline representatives, but in all practicality, not all departments have staff able to take on these courses (writing-intensive often translates to “grading-intensive”), and English departments are not necessarily able to supply appropriate faculty to teach disciplinary writing or content. Originally, “The Bay class” had been designed and taught by Wolfson, the program director, before Vélez began teaching it three years ago. Because Vélez’s home field is the rhetoric of science, her participation in the ESS program is less like an outsider coming in from the English department, and more like one of the faculty in the contextual courses: she was teaching within her “home” tradition and applying it to the complicated social, scientific, and political setting of the Chesapeake Bay.

## **Writing and the Culture of Science**

The main goals of the Bay Writing course are to demonstrate that effective writing and communicating are essential to becoming an effective environmental professional, and to ensure that students can work effectively with representatives of different interest groups. Students know this course will require them to apply their knowledge from contextual courses to the Chesapeake Bay Watershed environment. Synthesizing those materials is the first step towards learning to ask researchable questions and becoming contributors to environmental knowledge. Whether or not all our students wish to become full-time researchers, understanding methodology and documentation will enable them to evaluate competing scientific claims and be more adept at explaining research to non-scientists. Our students also may be working in industry or for funding agencies, where assessing project proposals and allocating funding will be a core job function.

Writing tasks early in the semester are short writing-to-learn exercises such as summarizing or predicting what should come next in a text, and peer reviews. These tasks help focus student attention, but also establish that students have to take responsibility for the quality of their contributions—not just for the sake of a grade, but because their choices have social consequences. One student admitted he hadn't initially been very rigorous in his peer critiques, but “I learned that it is better to be harsh and to the point than to sugarcoat things because sugarcoating does not help the

person writing it and it does not help you if they get a bad grade and ask you why you didn't tell them what was wrong" (Student self-report 2009). Later in the semester students practice writing more discipline-specific and professionally focused documents such as literature reviews, résumés/cover letters, and grant proposals (Hall 2006; MacDonald 1994).

Table 2 describes the current assignment types, as reshaped by Vélez, supported by a text about the history and ecology of the Chesapeake Bay (Horton 2003) and a rhetoric of science textbook (Penrose and Katz 2004). Each assignment connects writing and thinking skills with understanding the Bay, and each task connects to the kind of work required in the capstone courses.

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**Table 2. Writing assignments and goals in the Bay Writing course**

Assignment Type	Goals
Summarizing chapters in five sentences	Selecting essential details, justifying choices, understanding audience needs/expectations
Peer reviews	Assessing work of others, recognizing importance of thorough critique, using criticism to improve own work
Posing new research questions	Moving from the learning of established science to participating in the creation of new knowledge
Resumés and cover letters for real job or internship	Practicing search skills, solving a real problem [getting employment, experience] while recognizing that an employer's goals are not necessarily the same as a prospective employee's, selecting relevant details for a target audience
Track press releases back to original research articles	Identifying discourse changes necessary when addressing audiences with different levels of knowledge, interest, and motivations; improving library research skills
Analyze rhetorical moves in research articles	Recognize disciplinary standards for arranging information, selecting and presenting data; be able to describe these moves and how they might be ineffective for —or misinterpreted by —other audiences
Group project: literature review	Assessing available literature on a specific Bay topic, managing collaborative efforts, establishing accountability, learning enough about a topic to propose a course of action in the next project
Group project: grant proposal	Posing hypotheses based on prior research, assigning new research tasks, managing group progress, making contacts in local communities
Self-reflection essay	Assess changes in writing and thinking during the semester, plan for next learning tasks

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Throughout the semester, students practice problem-finding and problem-solving. They debate which questions are worth asking, and what methods will get the most interesting or useful data. “The Horton essays have challenged me to be more critical in how I think about facts that are presented to me. ‘How can that idea be tested?’ is a question that now runs through my thinking in and out of the science realm” (Student self-report 2009).

## **Teaching How to Work with Representatives of Different Interest Groups**

Deciding what questions are worth asking begs the larger question of what environmental conditions are most significant, or are in most immediate need of remediation/restoration. We would like to prevent future situations where different Chesapeake stakeholders misunderstand or refuse to engage productively with one another (Keiner 2009), so it is essential that our students learn that what seems “important” or “obvious” to them is not necessarily so to others, and the difference in perspective are not just due to stupidity, stubbornness, or cultural blinders. If the other points of view are summarily dismissed, “civic engagement” becomes impossible.

It is essential that students realize that what they have seen so far in their lives is not necessarily what others have seen; what they personally value is not necessarily what others value. We want our students to be able to articulate multiple sides of issues, see multiple angles, and realize that there are no simple solutions to these problems (Kiefer and Leff 2008). Some students are from families currently working the Bay or Watershed land; others are only a generation or two away from those activities. When we discuss overfishing or the remaining environmentally unfriendly farming practices, we are simultaneously asking students to understand best practices and to critique long established folkways of the region. These students are trying to shape a system of which they are already a part. It is one thing to stand outside a system and say “this should happen,” or “that intervention is essential, even though it will inconvenience some people.” It is another to realize that although “growth” is what is supposed to generate jobs for the region and benefit one’s friends and family, that is the very thing that will erode the “good” done by even drastic interventions to “Save the Bay” (Horton 2003).

In small group discussions, students discover “those farmers” are really “Bill who sits next to you and his dad” and “those watermen” are really “Marie’s male relatives going back three generations.” People whose livings have come from the bounty of the Bay have long been at odds with scientists and regulators about how best to preserve that bounty (Keiner 2009; Maryland DNR 2009a). Yet the students are here because they want the Bay, their home, to be better off for their interventions, no matter what their families do or did for a living. As students work through the readings and the course projects, even suburban students may come to the uncomfortable conclusion that their own homes or ways of living are contributing to the damage they have been complaining about “others” doing. They will have to walk similar lines when advocating best practices in their professional lives.

## **Sample Grant Project**

To write a successful grant proposal, students need to turn their personal ideas about “what ought to be done” into a well-researched project that will make scientific and cultural sense—not just to a funding source, but also to the communities which might benefit from the project. Typically, students build their proposals around a topic they explored for an earlier literature review, although often students can switch out of their original literature review teams to form new working groups.

One group of students connected what they learned from their literature review about riparian buffer zones with a social goal: help Towson students and town residents have opportunities to work with one another to reach common goals. The group proposed a community outreach program in which Towson students would work with local families to help replant the banks of nearby Towson Run (a small local stream), one of the many small tributaries that flow into the Bay. The students planned a short lesson for children about the importance of controlling run-off and how planting native shrubs and trees could help save the Bay. They planned an event at which local parents and children, along with interested Towson students, would have the chance to select and plant native vegetation. While these students’ initial intentions were good, the quality of their proposal improved as they learned more about existing stream restoration programs and decided they would connect their activities to Treemendous Maryland (Maryland DNR 2009b). Environmental projects are more sustainable if people are able to weave connections among groups, rather than trying to reinvent the wheel. Finally, community interventions must be measured and documented; so the proposal team created short quizzes to assess both the information children and families learned from the event, as well as their willingness to participate in future environmental activities.

In actual environmental practice, it would not be enough to propose a stream clean-up and planting day —students would need to consult with off-campus community groups to see what common interests actually existed, *then* discuss possible collaborations. To facilitate taking proposal ideas off the drawing board and into the community, Vélez has started inviting representatives from the Office of Student Affairs who are responsible for organizing student civic engagement projects to attend student proposal presentations; we hope that encouragement from outside people will inspire students to follow through on some of their ideas. Optimally, these grant projects would be more than just a class assignment—they would be a first step toward becoming part of the environmental workforce (Ward 1999). Some of our students do talk directly with the potential clients or beneficiaries of their group projects for the Bay Writing course, but while this is encouraged, it is not required. That changes when they get to their capstone experiences.

## **From Imagined Audiences to Real Ones: Capstone Courses and Internships**

In the senior seminar, usually led by the ESS program director, students assume roles as members of a “consulting company” working on a specific project for a client. As

with the Bay Writing course, students in this “company” come from eight different areas of specialization in the program and therefore come with different suites of skills, knowledge, and abilities. The Director finds the projects through conversations with her contacts on campus and in the community. The project is intended to present a ”real” situation in which intellectual work is required to consider the problem, review the underlying issues, identify the various stakeholders, collect data if appropriate, and suggest solutions/pathways for the client to consider. These clients understand the goals for the course and are clearly told that these are student projects (no guarantees are made about outcomes); still, they are usually very enthusiastic about contributing to the effort.

Since 2001, students have collaborated on projects ranging from assessing the feasibility of composting dining hall waste on campus, to assessing the challenges faced by small farms in Maryland, to looking at the patterns of electricity use on campus (Wolfson 2009). No two projects are exactly the same but there are critical similar components. As in the Bay Writing course, the students are learning how to work with people with different interests and skills on a common project. These projects depart from a more typical workforce approach to the problems addressed in a number of ways (for example, students are involved in the project even if they have no expertise in the area—in actual practice only people with the proper background and credentials would be on the team), but they are intended to give the students an opportunity to grapple with real world issues, work in teams, stretch their skills into areas they have not explicitly studied, and actively work to develop viable solutions.

For our ”Deer Management” project, we were asked by a natural resource manager from the local county to assess the deer population around the local reservoir. This required students to perform various tasks. They explored various deer and tree sampling options and attempted a deer population survey so we could get a sense of the actual numbers (and face the challenges of obtaining good data). To develop an understanding of the problem and its social components, the students needed to review the history of the local deer population, deer biology and ecology in general, the impact of forest health on water quality, the impact of deer browsing on forest regeneration and health, hunting, development policy, and so forth; that was the easy part. In addition to understanding the ”context” for the current problem (there were no seedlings or saplings in some locations with high deer density; the forest understory consisted of high densities of invasive grasses) and the increase in deer/auto collisions, the students needed to grapple with the ethics of hunting. Maintaining clear and civil communication was sometimes difficult, as the class included both hunters and vegans. The process of bringing the differing student opinions and approaches together was challenging for all concerned, but it was clearly a learning experience for everyone, including the director! In the final document, the team presented a variety of deer management solutions, along with the positive and negative impacts of each option, to the county.

In 2009, we were asked by our facilities managers to work on “greening” the university fleet of vehicles (the final recommendations of all the projects are posted at

<http://www.towson.edu/ess/studentprojects>). In light of our university president becoming a signatory of the American College & University Presidents' Climate Commitment in 2007 (ACUPCC 2009), the extensive press surrounding climate change, the role of greenhouse gases, and the regional commitment to increasing sustainability efforts, this request is quite timely. This project also involves developing an appreciation for the skills needed by many current fleet managers who have inherited vehicles and procurement processes that they might not have chosen for themselves. In order to understand the situation and the potential options, students must gather information from the literature and more directly from the stakeholders involved. Students spoke with various representatives from local jurisdictions, the state procurement agency, industry, and so forth, to gain insight into their approaches and perceptions. A great deal of time was spent as the students explored and taught each other about different sources of energy that can be used for vehicles, what the environmental and economic costs and benefits are of these sources of energy, the new technologies are under development, and the policies that advance and hinder a "greener" operation. As the material was gathered and shared, students began to develop lists of possible long term and short-term options (along with appropriate caveats regarding potential changes in technology and policy that can impact those options). Unlike most courses in which a canon is presented, there is no known "right" answer in these projects and the goal is learning how to develop an approach by asking questions, having an openness to coping with novel information, and integrating information in such a way that potential options or solutions can be developed.

## **Environmental Internships**

Those students who do not participate in the senior seminar undertake an environmental internship that consists of two distinct parts: the work students do and an analytical paper that goes well beyond describing that work. Our Environmental Internship course is designed to require the same intellectual growth as the senior seminar class. "Traditional" internships usually require students to work in realistic entry-level environmental jobs. They receive "credit" for the course based upon their performance in those jobs assessed by a combination of supervisory review and student self-reports about their activities. While these are valuable and do document "completion" of the task assigned, they do not necessarily lead to individual growth or encourage students to think about the larger contexts for their workplace activities.

Our internship course is designed to both provide the work experience and the opportunity for intellectual engagement. Students find a position that involves an environmental component; it does not matter if the work is volunteered or paid. They are required to put in at least 120 hours on this job, preferably over an extended period of time; our goal is not to just complete the hours, but to maximize the student's time in the workplace to learn about the people, the projects, and how things "get done" at that organization. In addition to the work, each student must develop (with the assistance of the internship coordinator, currently the program director) and submit a substantial paper in which the student places their work activities into its larger context: this paper may be an exploration of why the problem they were working on

exists, or the source of the agencies' regulatory powers, or the reasons behind the monitoring methods deployed in their work, for example.

Successful papers must go well beyond stating, "What I did during my internship" and must explore "big picture" questions such as the following:

- Why does this workplace function exist? (What is the problem being addressed?)
- What are the reasons we do things as we do? (What is the research that supports specific activities?)
- What are the goals of these specific activities? (Is this a voluntary activity or a response to a legislated mandate?)
- Are the stated goals being met by these activities? (How well does it work?)

Students meet with the internship coordinator to discuss what they have observed during their work experience and the areas of special interest that have arisen during their immersion in the workplace—their paper develops out of those conversations. The process of developing this paper allows students to go beyond describing and exploring the activities in which they were involved to develop a synthesis of the technical work within the political, regulatory, economic, ethical, educational or social systems in which this work occurs. Each paper ends with reflection by the student about their experiences. When discussing the paper with the student, Wolfson often explains the paper's purpose to them in the following terms: "The paper is intended to help you learn what you would need to know if you were to return as a supervisor. Along with understanding the daily tasks, you would need to know the strengths, weaknesses, and challenges faced by the organization."

Our students learn about the environment, environmental problems and solutions, and civic engagement focusing on the Chesapeake Bay ecosystem, one of the world's largest estuaries; but virtually all metropolitan areas have their own watershed issues, land use disputes, and opportunities to explore more sustainable ways of living. Other opportunities to engage students in addressing local concerns might focus on local forests, rivers, Native American ruins, or historic landscapes. Universities interested in connecting their environmental programs with local needs should begin by carefully assessing regional environmental issues and identifying faculty members interested in long-term interdisciplinary collaborations. These shared interests among the faculty and the opportunities they provide to engage students with their immediate world are critical to the success of our program.

## **Conclusion**

Preparing students for environmental careers means ensuring those students have multiple opportunities to learn and practice the intellectual, scientific, and social skills necessary for success in the field, including concrete practice with methods of analysis, ways of thinking, social interaction, and civic engagement. Lessons from earlier courses are integrated with communication activities in the Chesapeake Bay Writing class, then put into practice in real work settings during the senior seminar and

internships. Through these experiences, students begin to understand that in order to “fix” something, you need to understand it; you need to understand the underlying biogeochemistry of the natural system as well as the social constraints and the demands on the system that have created the current problem.

Most of our graduates enter the workforce, although some continue on to graduate programs. They often work at the same place they or others interned. Our graduates are employed by environmental consulting firms (doing restoration, mitigation, compliance, monitoring, etc.), federal agencies (Army Corps of Engineers, soil conservation, United States Department of Agriculture, United States Forest Service), state agencies (Maryland Department of Natural Resources, Maryland Department of Agriculture, Maryland Department of the Environment, and Maryland Department of Transportation), county and city agencies (natural resources protection agencies, parks and recreation, and planning departments) as well as local business and industries. They report that their experiences in the program, especially the senior seminar and the internship, were critical to obtaining their positions.

Our most successful students are able to communicate across interest groups and design interventions that are true to scientific principles while also responding to the needs of human communities who inhabit the metropolitan environment. Even if our students decide to pursue other kinds of careers, their broad knowledge base, communication skills, and civic engagement experiences will be valuable.

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