

Strategic Planning:

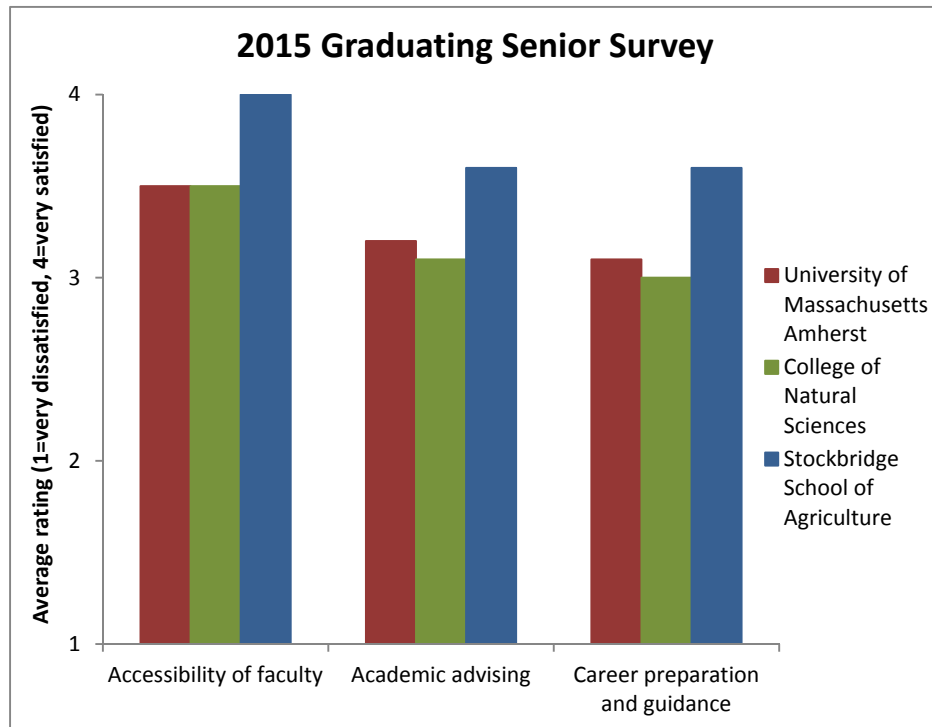
A Focus on Academic & Career Advising, Spring 2016

Part One. Analysis of the Current Landscape

Academic Advising

Academic and career advising within the Stockbridge School of Agriculture begin with prospective students. Prior to acceptance, potential students are invited to meet individually with an adviser to discuss their personal interests and career paths. Advisors are generally available during the spring and summer months prior to matriculation and often introduce students and parents to the greenhouses, farms, and other facilities associated with the major. All accepted students are contacted by an adviser and at least one student currently in their

respective major to welcome the potential new student and to solicit questions. All accepted students are invited to participate in a Facebook group for their respective major. Once enrolled, advisors meet with advisees at least once per semester during the pre-registration period. Advisors are available throughout the year for guidance.



Students graduating in 2015 rated academic advising within the Stockbridge School of Agriculture very highly (3.6 out of 4), considerably higher than the CNS average (3.1) and the UMass Amherst average (3.2).

Major-specific classes are regularly utilized to provide some level of group advising. Within our largest major, Sustainable Food & Farming, classes have been designed to include significant academic and career advising components:

Introduction to the Sustainable Food & Farming major - STOCKSCH 118 was specifically created to welcome freshmen and transfer students into the major. This class helps students develop a program plan for graduation, write a career statement on their personal goals, learn about internship opportunities, and explore job possibilities for the future. Seniors from the major are invited to the class to help students learn about course and internship opportunities. Recent graduates from the major come to class to talk about their early career progress and opportunities in the working world.

Writing for Sustainability – STOCKSCH 382 fulfills the junior writing requirement for the Sustainable Food & Farming major. It is also the primary career development opportunity for students in the major. The class introduces students to career-related writing, such as the resume, cover letter, letter to the editor, press release, social media, and grant writing. Students explore internship and work opportunities via a job and internship databases. Each student prepares written application and inquiry materials focused on real opportunities they wish to explore. In addition, writing assignments help students explore their primary career interests by writing about core values and career and life goals.

Capstone in Sustainable Food & Farming – STOCKSCH 485 -- seniors in the major are invited to take a capstone class which results in a professional presentation at the Massachusetts Undergraduate Research Conference in April each year. Students are supported in their exploration of a project that furthers their career interests. Their culminating experience as seniors at UMass results in a public demonstration of their work ethic, creativity, and ability to succeed in a professional setting.

Other examples of classes that classes which are utilized to support academic and career counselling are First Year Seminar for A.S. Students (STOCKSCH 192F), Arboricultural Field Techniques (NRC 102 and 210), Principles of Arboriculture (NRC 232), Seminar in Arboriculture and Community Forestry (NRC 191A), Equine Lecture Series (STOCKSCH 213), Equine Facility Management (STOCKSCH 252 and 302), and Business Concepts of Landscape Contracting (LANDARCH 297M),

Strengths:

1. Each A.S. and B.S. major has one or two academic advisors who specialize in the field.
2. Each student has the same academic adviser for their entire degree program.
3. Advisors are available for frequent consultation.
4. Advisors teach some of the principle courses in the major, allowing for regular informal counselling. Some of these courses have been specifically designed to enhance academic and career advising.
5. For some majors, the advisor utilizes social media to increase contact with advisees.

6. A.S. programs are supported by an experienced A.S. registrar who provides backup for all of the major advisors.

Weaknesses:

1. There is some inconsistency in the advising among majors.
2. For our largest major, more than 150 students are advised by the same individual. Although students receive excellent support, this is too many for one person to handle.

Career Advising

Academic and career advising generally are conducted concurrently and is provided at all meetings and selected classes as noted above. Academic advisors work closely with each student as they progress through their educational program to gain the educational background and experience necessary for their chosen career path or further education.

All of our students are encouraged to utilize internships, practica, and independent studies to assess potential career choices. Our A.S. students are all required to participate in an internship between their second and third semesters. Of all individuals graduating from our majors in 2015, 80% took advantage of internships, practica, and independent studies during their academic career at UMass.

Strengths:

1. We provide a central website for employers to post jobs and internships.
2. Some majors have internship fairs to expose employers to potential employees.
3. We facilitate participation of students in professional meetings to enhance their contact with potential employers.
4. Several majors use social media to advertise internships and full-time positions in the industry.

Weaknesses:

1. There is no centralized career services office.

Division of Labor

All Stockbridge School of Agriculture advising is done by major, and with one exception, students are advised by the same individual throughout their degree program. There is no central advising office for the School; however, the A.S. program has its own registrar, who is able to back up all A.S. advisors.

In each case, the advisor is a member of the faculty and a specialist within the field defined by the major, so that they can provide effective academic and career advising. The table below lists the majors, number of students involved, and the advisors.

A.S. Degrees	Number	Advisor
Arboriculture & Community Forest Management	23	Mark Reiland
Equine Management	21	Cassandra Uricchio
Landscape Contracting	19	Michael Davidsohn
Sustainable Food & Farming	11	Duane Greene
Sustainable Horticulture	7	Douglas Cox
Turfgrass Management	15	Michelle DaCosta – Freshman Pat Vittum -- Seniors
Total	96	

B.S. Degrees	Number	Advisor
Plant, Soil, & Insect Sciences	38	Susan Han
Sustainable Food & Farming	155	John Gerber
Sustainable Horticulture	28	Susan Han
Turfgrass Science & Management	29	Scott Ebdon
Total	250	

Peer advisors, either current seniors or recent graduates, assist with career advising within some of our courses. Several other courses invite agricultural practitioners as guest lectures, and others utilize regular field trips to visit agricultural business. Both of these latter approaches contribute significantly to career advising.

Strengths:

1. The advisor for each major is a member of the faculty and an expert in the field and well connected with career opportunities. This person also teaches some of the principle courses within the major.
2. Throughout the degree, individuals within a major are advised by the same advisor.
3. Several programs provide networking opportunities to students by inviting industry professionals to campus to discuss opportunities.

Weaknesses:

1. Except for the support provided to the A.S. students by the registrar, there is no central support for advising.

Tracking Student Progress

For A.S. students, the registrar evaluates progress each semester prior to preregistration advising. Missing required courses are noted so that the advisor may discuss these deficiencies with students as plans are made for the following semester. Since the degree program is intended to take only 4 semesters, the advisors work hard to keep the students on track.

For B.S. students, tracking is less formal and performed by each advisor prior to the preregistration period. Discussion during preregistration consultations include assistance a student might need at that particular point of their study. A plan is usually constructed to help students understand how they can complete the remaining requirements during their remaining semesters on campus.

In general, more than 90% of students meet with an advisor each semester, but for several of our majors, 100% meet with the advisor each semester.

Strengths:

1. A.S. students are tracked carefully by our A.S. registrar.
2. There is excellent contact between students and advisors, with almost all students discussing degree progress with their advisor at least twice per year.

Weaknesses:

1. Tracking of our B.S. students is not managed centrally, so it relies on each advisor to make sure that students progress properly.

Experiential Opportunities

The first professor hired by the Massachusetts Agricultural College, Levi Stockbridge, regularly expressed the need for agricultural students to “learn by doing.” Professor Stockbridge incorporated experiential education extensively throughout the agricultural programs of 150 years ago, and the agricultural programs of the Massachusetts Agricultural College/Massachusetts State College/University of Massachusetts have continued that approach to agricultural education for 150 years. Many of the classes within the Stockbridge School of Agriculture incorporate hands-on education through laboratories, farm visits, campus landscape projects, and use of our farm and greenhouse facilities. Some of our courses focus on providing a real-world business experience:

1. The UMass Student Farming Enterprise is a year-round class in which students manage a small organic farm and sell their produce through a CSA, farmers market, and to university and private food service and retail markets. The farm was ranked 5th best in the nation in 2015!
2. Stockbridge Stables is similar to the Student Farming Enterprise, but students run a equine stable. Through the process, they board horses, manage their health, and run the business side of this enterprise.
3. Landscape Contracting Senior Project is an opportunity for students in our A.S. degree in Landscape Contracting to take on a significant landscape design and building project on campus. This takes them through all parts of the process, and the result is a significant improvement in the UMass landscape.
4. Arboriculture and Landscape Services. Arboriculture & Community Forest Management students work with UMass Landscape Services on numerous tree projects on campus each

year, exposing our students to many real-world situations, including pruning, tree removal, and cabling. They also have worked on the campus tree inventory.

Our A.S. degree programs require 3- to 5-month internships for all students. Advisors work with students to help assure that these are valuable contributions to the students' education. B.S. students are encouraged to participate in independent study projects, practica, and internships as much as possible and 80% of our students do so.

All of our research labs and field research projects give students the potential for research experience. Several other experiential opportunities exist for our students:

1. The UMass Permaculture Initiative is a unique class and program that has converted underused grass lawns on the campus into edible, low-maintenance, and easily replicable food gardens.
2. The UMass Student Food Advocacy group convinced the UMass Amherst Chancellor to make a commitment to purchasing 20% "real food" in all of the UMass Dining Commons by 2020. Students promote education, leadership and activism for a more just and sustainable food system.
3. The Massachusetts Renaissance Center Garden is a demonstration garden open to the public, featuring herbs and vegetables grown during Shakespeare's time.
4. The School Garden Project helps K-6 teachers in several local schools create and use gardens as living classrooms where students can get their hands dirty and learn lessons from nature, apply their critical thinking, math, science and other knowledge gained in the classroom.
5. The UMass Food for All Garden is a student-led project that grows food for and with low-income community members. Food is distributed through Not Bread Alone and the Amherst Survival Center.
6. The Art Garden is a student project that is growing art materials for use by local artists.
7. GardenShare is a student run garden and RSO for students with little or no gardening experience. The one acre garden is within walking distance of campus. This project helps students learn to garden and work together in a collaborative environment.
8. The UMass Bee Keeping Club raises bees at the Agricultural Learning Center.
9. The Spiritual Ecology and Regenerative Systems group is co-creating a food forest and an herbal spiral at the UMass Agricultural Learning Center.

Strengths:

1. All A.S. students participate in an internship as a major portion of their education.
2. Formal, real-world experiences are offered through the Student Farming Enterprise and Stockbridge Stables.
3. Many experiential opportunities exist on campus for our students.
4. We recently hired a part-time internship coordinator for Sustainable Food & Farming students.
5. We provide web-based instruction for Sustainable Food & Farming interns:
<https://sustfoodfarm.org/internship/>.

Weaknesses:

1. Some of the best experiences are not available to students in all of our majors.
2. We lack funds to support many potentially valuable experiential opportunities.

Part Two. Goals for Academic and Career Advising and the Student Experience

Academic and Career Advising

1. Every student will know soon after acceptance to UMass Amherst who their academic advisor is and how to contact her or him. Expert advising will begin at summer NSO programs.
2. Academic advisors will be knowledgeable of the academic requirements and the career opportunities of the major for which they advise. They will be regularly available to advisees and responsive to their requests. They will pursue all avenues available to connect with students and to connect students with each other, with other members of the faculty, and with agricultural practitioners, and with potential employers.
3. For each major within the Stockbridge School of Agriculture, courses will provide significant opportunities for students to survey the career opportunities within the major (freshman and sophomore) and to develop materials to help them interview and obtain jobs (junior and senior).
4. The Stockbridge School of Agriculture will provide a central clearinghouse for career opportunities and will help facilitate the connection of students with employers.
5. In cooperation with other departments in the School of Earth & Sustainability, we will provide the career service necessary to assure that our graduates are optimally employed.

Division of Labor

1. Advising responsibilities will be given only to individuals who are experts in the field defined by the major, and the number of advisees will not be so large as to prevent high quality interaction between advisor and advisee. Students will be assigned to the same advisor for their entire degree program.
2. The Stockbridge School of Agriculture will provide central support of advisors to improve consistency among advisors and to aid them with paperwork.

Tracking Student Progress

1. Academic advisors and the A.S. registrar will track student progress carefully, working hard to avoid prolonging a student's time at UMass.
2. All B.S. advisors will utilize the EAB SSC Advising Tool.

Experiential Opportunities

1. At least 80% of all students graduating from one of the majors in the Stockbridge School of Agriculture will participate in an internship, practicum, or other similar experiential opportunity.
2. Comparable experiential opportunities will be made available for all majors within the Stockbridge School of Agriculture. These opportunities will include courses which represent real business enterprises, student groups, and research programs.

Part Three. Academic and Career Advising Action Plan

1. Use the 45 years of experience of our A.S. registrar to assess the B.S. advising needs that could be assumed centrally. Determine the level of support that will optimize the human resources available. We will implement changes by the end of the summer, 2016.
2. Conduct a semi-annual discussion and training summit with all 10 A.S. and B.S. advisors and the administrative staff to enhance the consistency of all undergraduate advising. This summit will cover all topics of importance to advising, including the use of ARR's, the EAB SSC Advising, Tool, social media as a way to interact with students, etc. We will begin this summit in the summer, 2016.
3. Cooperate with other units within the School of Earth & Sustainability to develop career services. This effort began in March, 2016, and will continue. Additional resources will be required to support career services.
4. Use modern communication strategies to better interact with alumni working in the various agricultural fields, and use this interaction to facilitate better connections between students and employers. We are in the process of hiring a communications director, so this effort will likely be able to begin in June, 2016.
5. Establish focus groups within each major to help develop new experiential opportunities for students within that major. This effort will begin in the fall, 2016.
6. Begin a centralized effort to acquire funds to support student experiential learning. This may include the development offices and will begin in summer, 2016.
7. Develop student enterprise (or similar efforts which give a significant real-world experience) courses for all appropriate majors. Course proposals will be developed starting in fall, 2016, with the goal of starting in the fall, 2017.
8. Create a central mechanism to track student progress after graduation.

ENVIRONMENTAL SCIENCE

ACADEMIC & CAREER ADVISING

This document provides a focused look at the Environmental Science program, which is co-administered by the Department of Environmental Conservation (ECo), the Department of Geosciences (GEO), and the Stockbridge School of Agriculture (SSA). It serves as an addendum to each of the department's individual plans.

Part I. Analysis of the Current Landscape

The Environmental Science (ENVSCI) major at the University of Massachusetts is an interdepartmental program administered by ECo, GEO, and SSA under the banner of the new School of Earth & Sustainability. The partnering units share the responsibilities to provide faculty-centered advising. In addition, ENVSCI also has the support of a faculty program manager to oversee the administration of the major, coordinate across departments and faculty advisors, and provide overarching support and guidance to ENVSCI students.

Program Background

In 2012, there was a major restructuring of ENVSCI program, which included its redesign as a truly interdepartmental program with a faculty program manager to coordinate academic advising and course offerings. Concurrent with this redesign, specific concentration areas (in policy, biology, and toxicology) were eliminated in favor of an approach that helps guide students towards identifying possible career directions and planning their course work and co-curricular activities accordingly. Critical to the success of this plan are three mandatory seminar classes (each 1 credit) which were put in place to provide a strong centralized advising component for all students in the major across their first two years in the program. Major requirements were also modified to include two “praxes,” or practical experiences of each student prior to graduation. More detail is provided in later sections about these changes.

These changes were first implemented in Fall 2012 and the improvements to our student experience are starting to be reflected in the UMass Senior Survey results. The upcoming class of 2016 will be our first crop of students who entered as incoming freshmen under the new program organization. The 2015 results include a large percentage of students who entered the major as sophomores or juniors (both internal and external transfers), and you can see that the results of that survey were higher than previous years.

Career Avenues and Options

The needs of our students shape our approach to academic and career advising. A large proportion of graduating seniors in ENVSCI plan to enter the job market after graduation (Table 1), while approximately one quarter will head directly to graduate school. However, the number of students planning to pursue graduate work within the next five years is roughly equivalent to those who will do so immediately. So we aim to provide students with a firm foundation for this possible pathway. Consequently, our advising is designed to meet

the dual demands of the workforce needs of employers (in both private and public sectors), while providing our students with the advice and training to continue their education via graduate school if they so choose.

Recent Environmental Science graduates have enrolled in graduate programs as varied as conservation biology, hydrogeology, environmental soil science, wetland science, environmental chemistry, ecotoxicology, environmental policy, and law.

The career outcomes from ENVSCI are as varied as the major itself, but several possible employment tracks are emphasized to students: private-sector environmental consulting, environmental regulation (state and federal levels); and non-governmental environmental organizations.

Unit	Full-time employment	Part-time employment	Graduate or prof school	Volunteer
ENVSCI	69%	7.1%	21.4%	0%
CNS	53%	10%	31%	2%
Campus	65%	9%	21%	1%

Table 1. Post graduation plans of ENVSCI graduating seniors compared to CNS and campus wide undergraduate students. Source: 2015 UMass senior survey data.

Environmental Science: Undergraduate Education

UMass Amherst’s Environmental Science Program is an interdisciplinary academic program, which allows us to provide students with faculty expertise in biological/ecological and geophysical sciences. The curriculum includes innovative course offerings that extend the traditional classroom experience to outreach activities including environmental applications and problem solving in off-campus community settings. As part of the undergraduate training, ENVSCI majors also enroll in special seminars tailored to assist with curriculum planning and career development. Students benefit from a program manager and an interdisciplinary team of faculty committed to their long-term success.

Currently, we have approximately 260 students in the Environmental Science major.

First-year seminars

All entering students (regardless of status) must enroll in an ENVSCI seminar with the Program Manager, who also serves as the Chief Undergraduate Advisor (CUA). (ENVIRSCI 191A in Fall, and 194A in Spring). Students take both seminars regardless of which term they enter. The first-year seminar series is designed for students in their “first-year” in the major –regardless of how many credits they may have already earned.

The Fall seminar (ENVIRSCI 191A) is designed as a coordinated group advising session that meets for one hour weekly with the CUA. Guest speakers are invited from across campus to

introduce students to the many programs and opportunities available to them, including: International Programs, Domestic Exchange and Five-College Interchange, Interdisciplinary Concentration in Science (iCons), Career Services-and Career Connect, Library Services, Center for Counseling and Psychological Health, etc. When it is time for preregistration for the coming semester, the CUA reviews major requirements, how to read the SPIRE Academic Requirements Report (ARR), and how best to sequence required classes. This presentation is timed to occur just before registration actually begins when students will be meeting with their individual faculty advisors.

The fall first-year seminar also includes a “Kick-off Celebration” which brings together students and program faculty for a festive event (held in the Student Union Ballroom), with refreshments, faculty introductions, and a guided dialogue about a pertinent environmental issue. All student in the major are invited, but the event is purposely scheduled to take place during the class period for the first-year seminar class to ensure that these students will be in attendance.

(In a typical fall semester, this class will include nearly 40% of the 260+/- students in the major.)

The Spring seminar (ENVIRSCI 194A) is subtitled, “Flavors of Environmental Science.” Each week a different ENVSCI faculty member presents his/her research to the class. Students learn about cutting-edge science and are encouraged to think about whether they want to take upper-level electives about that topic, and students are encouraged to speak to the individual faculty about possible research positions. Faculty are drawn from the three departments in the new School of Earth and Sustainability, as well as Environmental Health Sciences and Environmental Engineering. The CUA reserves one class period to discuss preregistration planning.

Curriculum & Career Planning Seminar

A second spring seminar is targeted for sophomores (although many students take this as juniors –if it is their first year in the major). This class (ENVIRSCI 294A) is entitled, “Career and Curriculum Planning.” This class is designed to help students plan and organize their remaining time at UMASS Amherst – based on their intended career focus.

The seminar introduces students to:

- the availability of various related Minors and Certificates,
- 5th year Masters and other Professional Masters degrees offered by UMASS Amherst.
- Finding REU and other research opportunities,
- Strategies for research oriented graduate programs
- Study exchange opportunities. The CUA organizes a study exchange student panel where upper classmen in ENVSCI each give a short presentation regarding their international or domestic exchange experience.

- Career Services and Career Connect. Nessim Watson is invited to talk about “Resume Writing” and “Using Social Media for Networking.”
- Possible career directions, with guest speakers from the private environmental consulting sector, State and/or Federal Environmental Regulatory agencies, and non-governmental conservation organizations. (UMASS/program alumni are invited whenever possible.)

Students are tasked with developing a curriculum plan for their remaining undergraduate time at UMASS, clearly indicating their remaining requirements and how they are going to fill them, term by term. Just prior to preregistration time, the CUA makes a presentation regarding major requirements, reading the ARR, available IE courses, etc. Students are prepped for meeting with their individual faculty advisors.

If one considers the combined population of majors enrolled in one or both of these spring seminars (ENVIRSCI 194A and/or 294A), the **CUA is meeting with roughly 50-55% of the students presently declared in the major on a weekly basis.**

Current Academic & Career Advising Strategies in ENVSCI

Faculty-Centered Advising

The Environmental Science program provides faculty-centered advising in which every student is assigned to an individual faculty advisor, who is based in one of the three partnering departments. Students are matched by the CUA with faculty advisors according to their stated interests as expressed during NSO or at an intake advising meeting. Our goal is to have every incoming student meet with the CUA as they enter the major. The only exception we find is those students who declare the major during summer NSO and are initially advised by another program.

Addressing the needs of Different Populations

Freshmen Orientation:

The CUA meets with each group of entering ENVSCI students during summer NSO. The CUA gives a Powerpoint presentation highlighting the major with respect to its requirements, common career outcomes, research and internship opportunities, and includes a discussion of the basic advising structure and an introduction to unique academic opportunities (such as international and domestic exchange, and iCons). Students are asked about any specific goals or interests they may have so that they can be better matched with faculty advisors in the program.

Involuntary majors (whose first choice was Engineering or Computer Science) are advised by the CUA, who helps guide them until they are able to officially enter the major of their choice. In some cases, students decide to stay in the ENVSCI major even though it wasn't their first choice.

External Transfers:

The CUA meets with each student during transfer NSO (in either January or July). Each student's Transfer Credit Evaluation report is evaluated with respect to major requirements, and students are immediately advised regarding the length of time needed to graduate from the university under the ENVSCI program requirements. Preliminary course plans are sketched out for each student indicating where requirement course work must be taken and where room for electives exists.

Internal Transfer Students (Change of Majors):

The CUA meets with each incoming student before that student's change of major is processed. Initial meetings are approximately 30 minutes in length. Each student's SPIRE ARR is reviewed for course history and status of GenEd requirements. A preliminary course plan is developed for each student –showing where required course work must be taken and where electives can fit. Students are asked about their interest in study exchange (IP and NSE). Notes are made regarding the likely “best” semester for this exchange to occur. The student is given a copy of the course plan and a copy is made for the student's future faculty advisor. Students are asked about specific interests within the major/field. This allows CUA to match students with faculty advisors who have expertise in these areas.

Overall Advising Framework

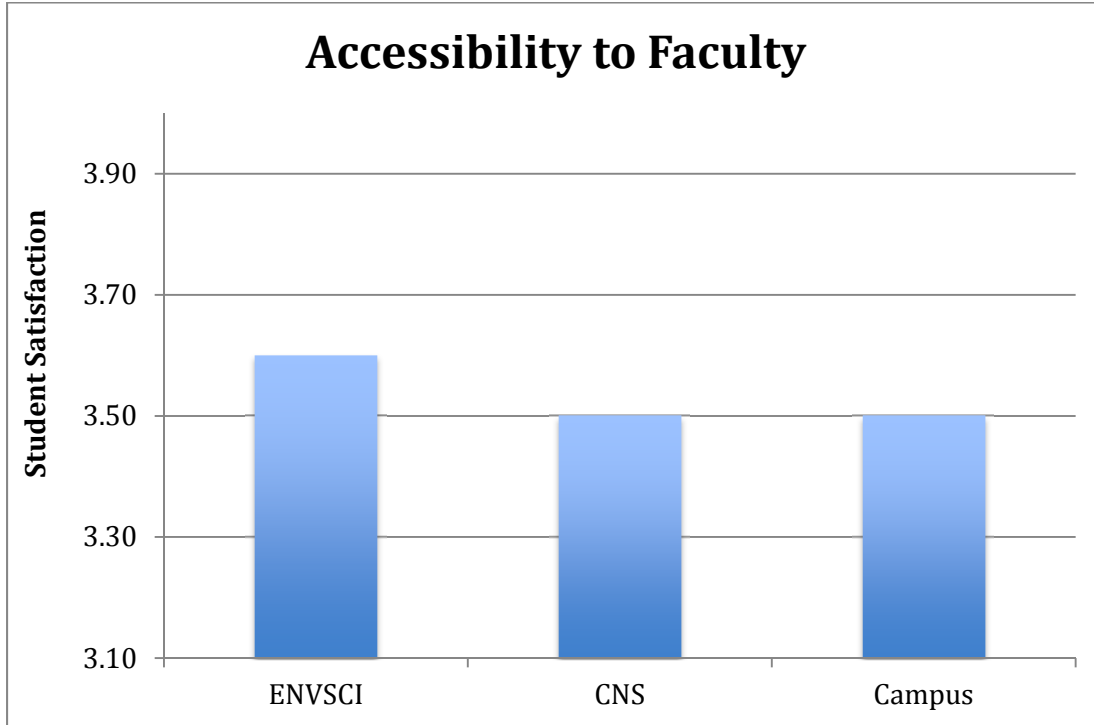
- Each student is assigned an individual faculty advisor.
- In addition to faculty advisors, the ENVSCI program has a dedicated faculty program manager, who coordinates across the three departments, is available to meet and advise current students, and serves as the primary contact for new students, transfers and change of majors.
- Registration holds are placed on all students (primary majors only per university standard), requiring that each student meet with his/her faculty advisor at least once a semester.
- Beyond the registration periods, ENVSCI faculty advisors remain readily available to meet with their advisees and other students throughout the year for academic and career advising, and students are encouraged to access their advisors whenever they need assistance.
- The CUA provides current advising materials to the faculty advisors via a Moodle site, including but not limited to:
 - checklist of major requirements, updates on course availability (for all required classes and popular electives), a schedule grid showing times of class meetings for all required classes and popular electives, a list of popular electives offered by a variety of related programs,

- a primer on ‘advising best practices’ and ‘strategies for advising’, and a section on frequently asked questions dealing with academic regulations and policies.
- The CUA also offers faculty advising workshops each Fall, with at least two offerings of the material.
- There are three separate, required, 1-credit seminars in the major –taught by the CUA. All have a significant advising component.
- The CUA communicates with students via email to remind them of important academic deadlines.

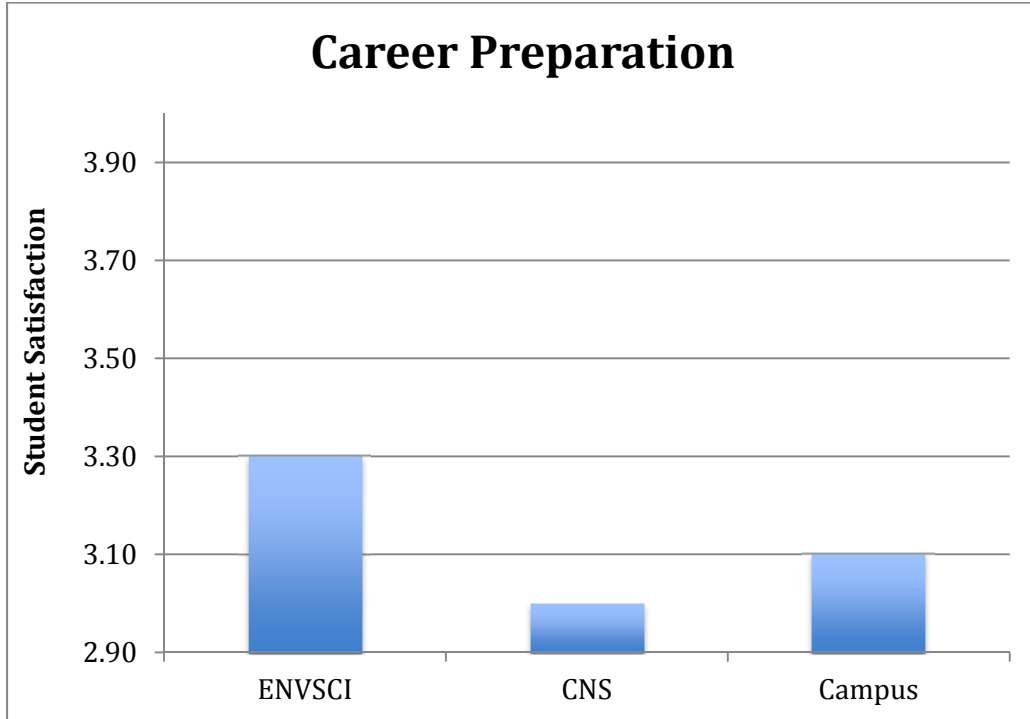
How Are We Doing in Academic & Career Advising?

Based on the 2015 UMass senior survey data, ENVSCI is doing a very effective job of meeting the academic and career advising needs and expectations of our students, exceeding the average for all CNS units as well as the UMass campus.

- ENVSCI all provide our majors with very high faculty accessibility (3.6/4), illustrating our strong commitment to our majors.

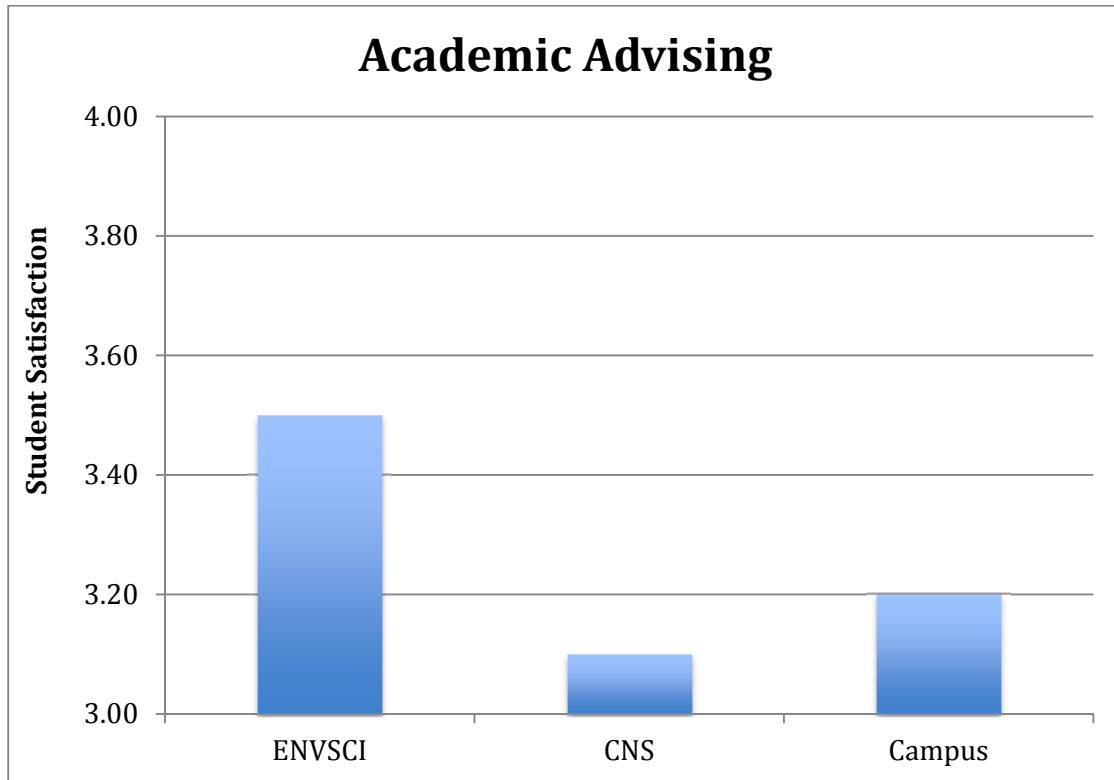


- For career preparation and guidance, ENVSCI majors indicated a moderately high level (3.3/4) of satisfaction in comparison to other CNS units and the campus. Breaking down these data, 50% of ENVSCI students responded that they were Very Satisfied (4/4), with 26% Somewhat Satisfied, and 24% Somewhat Dissatisfied.



- ENVSCI majors earned higher student satisfaction academic advising relative to other CNS units and the campus.

It is notable that when these data are broken down, more than 71% of students indicated that they were Very Satisfied (4/4), 14% were Somewhat Satisfied (3/4), and 12% were Somewhat Dissatisfied (2/4).



Division of Labor/Usage of Personnel

Faculty advisors are drawn from the three partnering departments. There are presently thirty (30) ENVSCI faculty advisors, with varied roles and job descriptions. Most are tenured faculty, others pre-tenure faculty, others extension faculty, and lecturers. The ENVSCI Program Manager and CUA is also a faculty lecturer. The Program Manager has the highest advising load compared to other faculty with upwards of 60 students, whereas the typical advising load for other faculty range between 5-20 students (depending on individual departmental culture). ENVSCI does not have dedicated professional advising staff or peer advisors, but we are exploring the possibility of this supplemental support system.

Data Analytics/Tracking

With our faculty-centered advising, every student is tracked by their individual advisor for academic progress, with particular focus on GPA and progress toward degree completion (using ARR). Virtually, 100% of our students meet with their faculty advisor at a minimum

of twice per year during pre-registration periods. In addition, the CUA provides over-arching tracking of student progress using the EAB Student Success Collaborative (SSC). Various campaigns are run by the CUA and students are targeted for specific outreach activities throughout the semester.

EAB SSC Campaigns

After grades are finalized each semester, the CUA uses SSC to identify students who have performed poorly in sequential required coursework (namely, BIOL 151, CHEM 111, and MATH 127). These students are emailed regarding the need to re-enroll in these courses for the following term, and individual faculty advisors are copied on this correspondence. If a student is identified who has performed poorly in more than one course, the student is invited in for a meeting to discuss the situation so that an assessment can be made about the likelihood of success upon repeating the course(s). Where appropriate, the CUA introduces the possibility of changing majors –and the students are given specific guidance regarding other possible programs and how their requirements and career outcomes compare/relate to the ES program.

SSC is also used to track whether students have registered for the proper ES seminar courses in the appropriate semester. Students who are “missing” these classes are contacted via email and told to register for the appropriate course (or to contact the CUA for a further discussion regarding specific circumstances).

At mid-semester times, additional campaigns are run to identify the “murky middle” of students with low (but still “in good standing” GPAs). These students are not always contacted (because they will be seeing their faculty advisor during preregistration), but a closer look is taken by the CUA to evaluate whether there has been any downward trend, and sometimes a recommendation is made simply to repeat a class in order to raise their GPA (or to request a repeat course substitution –when appropriate).

SPIRE ARR & Query Tool

The Academic Requirement report (ARR) is treated as a “contract” with each student, and we strive to maintain its accuracy. The ARR is used to “clear” students for graduation. The CUA regularly processes ARR exceptions when needed to accept unique transfer credits or exchange courses towards major requirements. Student are encouraged to review their ARR with their faculty advisor and to alert the CUA of any suspected omissions or errors to the report.

The SPIRE Query Tool is used by the CUA to determine if all ENVSCI seniors have satisfied their Integrative Experience (IE) requirement prior to their last semester of expected enrollment. Students are contacted as needed to assure that graduation requirements are being met “on time.”

Experiential Opportunities

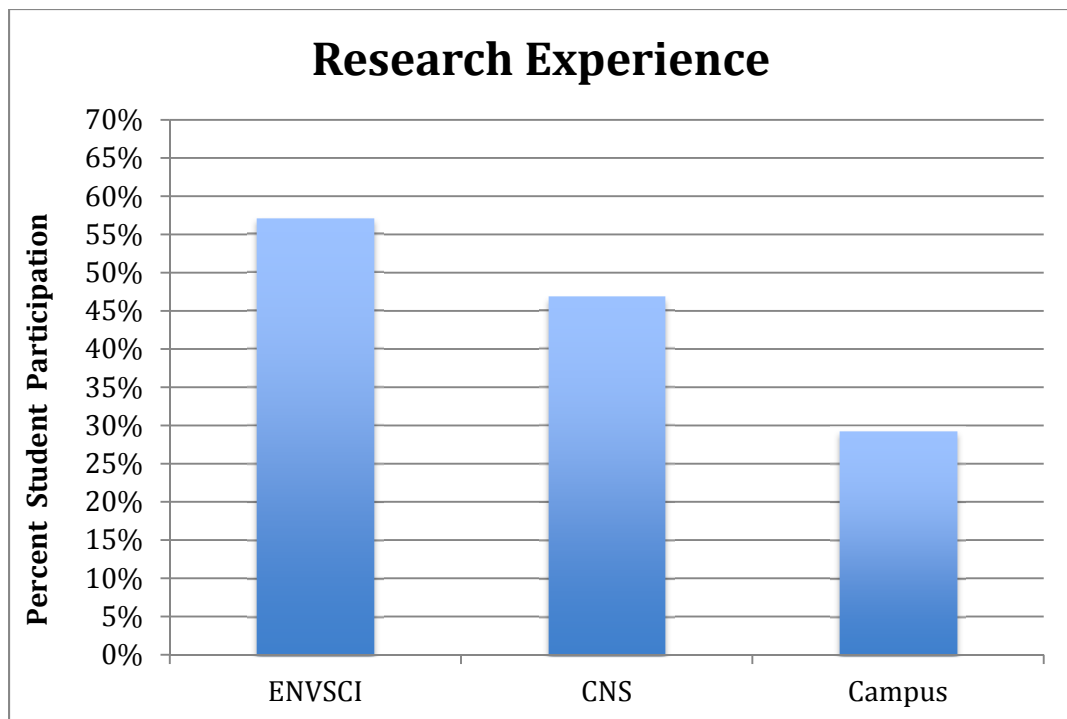
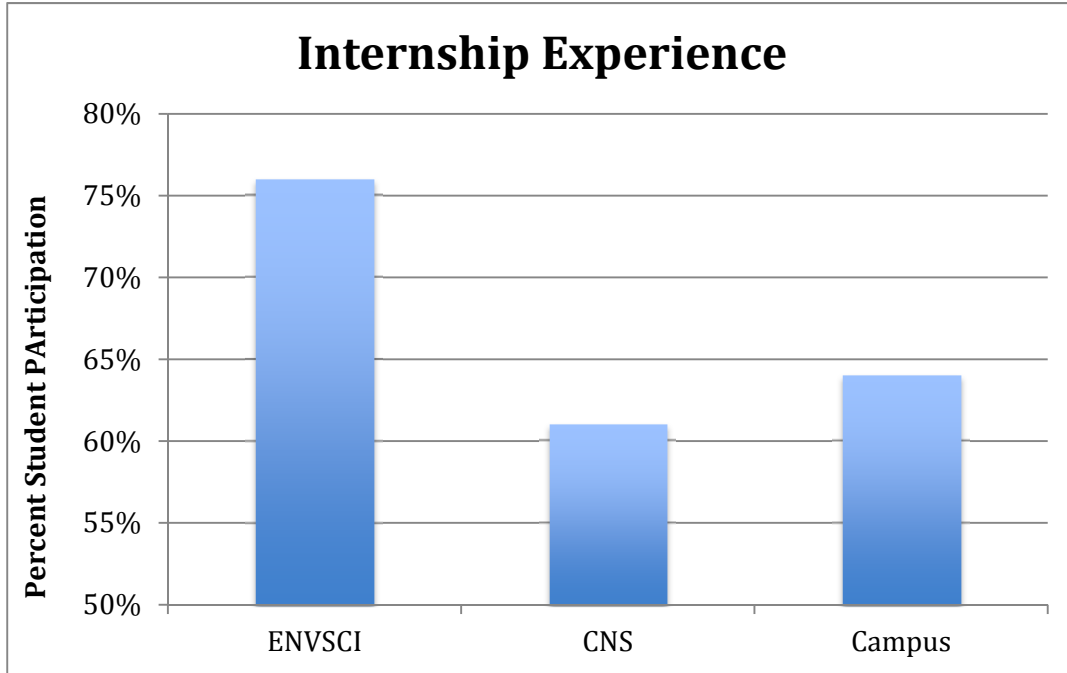
Research and Internship Emphasis

Research and internship opportunities are highly valued and this is stressed to the students starting with their initial NSO meeting and through the three required seminars. Starting in Fall 2012, ENVSCI students are **required** to complete two “praxes” – and these can be filled with either research or internship credits, or with specific courses that include a significant skills component (such as geographic information systems, site assessment, plant identification, hazardous waste operations -OSHA 40-hour certification, etc.)

We recognize that our curriculum cannot provide all of the professional experiences our students need to be most competitive in the job market, so we strongly encourage and facilitate our students obtain additional experiences during the summer via internships and pre-professional summer employment. We stress the value of related volunteer experience (dove-tailed with other summer employment), when paid internships are not possible. Students are not typically encouraged to take summer classes (unless this is what is needed for timely graduation), but when this is appropriate, we encourage students to choose on-line classes that can be completed concurrent with an internship experience. We also work hard to provide our students with opportunities to gain research experiences. There are multiple opportunities for gaining these research experiences, including:

- Working with individual faculty or graduate students on their research projects via independent studies, practica, and Honors projects. Each semester the ENVIRSCI CUA queries faculty and post-docs from across the three cooperating departments and compiles a list of available undergraduate research opportunities. This list is circulated via email to our ENVSCI students at the start of each semester and prior to summer as well. The list is then published on the program website. An average of two dozen or more opportunities are typically available in any semester.
- ENVSCI faculty also participate in the new CAFE Summer Scholars program. Beginning in summer 2016, the Center for Agriculture, Food & the Environment will offer upwards of 30 summer scholarships for undergraduate students to work with faculty with active MA Experiment Station Projects and UMass Extension Initiatives.
- Faculty also work with students in developing honors theses in conjunction with iCons, Commonwealth Honors College, and research experiences with NSF Research Experiences for Undergraduates (REU) programs.
- Individual faculty in ECO and GEO also circulate announcements of external internships, REUs or other opportunities as they become aware of them through their own professional networks.
- Due to the highly interdisciplinary nature of the major, many ENVSCI students also find research projects with faculty outside our immediate program (including Micro, Biology, VASCI, and Biochemistry).

Based upon 2015 UMass senior survey data, most of our majors gain valuable out-of-classroom experience through internships and other field-related experiences or research opportunities with a faculty member. Over 75% of ENVSCI majors participated in some kind of internship opportunity during their time at UMass, and more than 57% of ENVSCI majors completed a research experience. Both of these metrics well exceed the average for all CNS units as well as the campus.



Study Exchange Emphasis

The number of ENVSCI students participating in study exchange (domestic and international) is growing. Student exchange is highlighted in both the fall first-year seminar and the spring sophomore career and curriculum planning class. The CUA has worked extensively with UMASS International Programs on a Curriculum Integration project which preapproved over two dozen international sites and their course offerings for ENVSCI majors. Consequently, ENVSCI has its own Study Abroad literature and advertising for our students (and prospective students).

The 2015 Senior Survey reports that 14% of the ENVSCI respondents completed an International Exchange, and it is noteworthy that nearly this many students also completed a domestic exchange through the National Student Exchange (NSE), going to locales such as Hawaii and Montana. NSE experiences are promoted as a cost-effective solution for (in-state) students wishing to study in a different geographic region with a different climate and/or ecosystem to study. While these exchanges do not constitute international experiences, they do place students in very different cultural and academic settings that increase their professional skill sets. Unfortunately, the Senior Survey does not track NSE data.

Communication

We invest greatly in our communication strategies, working with students in curriculum and career planning, including:

- Faculty-centered advising, in which every student is assigned a major advisor and must meet with every semester to pre-register for classes;
- Three, required seminars that provide students with weekly interactions with program manager/CUA – with approximately half the total major population enrolled in one of the three seminars in any given semester;
- Readily accessible printed and on-line materials on program requirements, major, learning goals, and career opportunities;
- Regular email communications from CUA alerting students to key deadlines, advising, courses, and campus events;
- Regular email circulation of available undergraduate research/field and scholarship opportunities;
- Current Academic Requirement Reports (ARR), so that students have ready access to their academic status and requirements;

School of Earth & Sustainability

In partnership with the Department of Geosciences and Stockbridge School of Agriculture, ECO is preparing to launch a new School of Earth & Sustainability (SES), which brings together the diverse suite of degree programs and research offered by the three departments. Some of the school's key objectives include: improve coordination and collaboration

between the departments, and provide shared overarching services. With this in mind, SES leaders are launching an initiative to develop effective SES career development, workforce engagement, and alumni support services. The school is developing a SES Workforce, Employer, and Alumni Engagement Plan that includes action steps in the short, mid, and long term. The implementation of the plan will help ENVSCI, and its partnering departments, to enhance undergraduate support and career advising. In the sections below, we've parsed out what goals and actions follow under the EMVSCI program and what ones are addressed through SES and its Workforce Engagement Initiative.

Part II. Goals for Academic and Career Advising and the Student Experience

On a whole, we are very proud of our commitment to high-quality undergraduate education. Through the curriculum, student support services, our undergraduates emerge from UMass Amherst well equipped to secure a meaningful professional position or go pursue an advanced degree. We also recognize areas of improvement and opportunity.

Overarching Goals

Similar to goals set by other programs in SES, the general goals we have for the ENVSCI program include:

- Continue our long-standing commitment to faculty-centered advising in which 100% of our majors are assigned a faculty major advisor who guides their curricular and career planning.
- Under the new School of Earth & Sustainability, augment existing advising with shared services focused on career development and workforce engagement.
- Further improve our students' overall satisfaction in their major.
- Maintain sufficient access and availability to core required courses, and improve access to popular electives that are experiencing capacity and/or enrollment issues.
- Continue to grow the percentage of our students obtaining out-of-classroom, hands-on experiences via internships and research experiences with faculty. The goal is for 80-85% of our students to engage in out-of-classroom experiences.
- Increase the percentage of our students participating in enriching experiences such as the Honors Program, iCons, Eco-Rep, Sustainability Fellows, etc.
- Identify meaningful, practicable opportunities to nurture a sense of community among our students, faculty, and staff.

Academic & Career Advising

There are also specific goals targeted to improve academic and career advising, and our students' overall preparedness for graduation and beyond.

- Understand what are the essential functions of department-level or major program advisors and identify how the new School of Earth & Sustainability can provide some overarching support and services to students and faculty.

- Develop and implement a SES career development and workforce engagement plan that includes strategies for building support internally, developing a framework, and providing a range of opportunities for engaging with the workforce.
- Work with students to understand that they are ultimately responsible for their education and career decisions. Supported by advising sessions, students plan how to tailor their undergraduate experience to combine classroom study, lab and fieldwork, internships, team projects, and service learning projects to enhance their career development.
- Expand work with faculty to share best practices for advising and aid them in providing skillful career guidance.
- Continue to work with students, individually and as a community of learners, to review degree requirements, monitor their progress, and find courses that align with their interests and career goals. Currently, this is provided by individual advising sessions with faculty advisors and through required career seminars. We envision providing other opportunities for students to gain access to academic and career planning support (e.g., advising seminars and workshops, peer advising, career panels, etc.)..
- Build stronger relationships with UMass Career Services and specifically the CNS Career Advisors.
- Increase student awareness of various experiential opportunities they can engage in during their time at UMass.

Support & Tools

In order to enhance student support, ENVSCI and its partners need to clearly understand goals and priorities, identify roles/responsibilities, compile data and develop metrics for success, and implement priority actions.

- Within the SES career development and workforce engagement plan, identify roles and responsibilities. The plan should include what we can do now with existing resources and what can be done with additional funding and staff.
- Within each program, consider how to streamline advising and maximize the use of faculty time.
- Develop career-focused surveys for: 1) graduating seniors and 2) alumni. The intent of these surveys is to supplement existing data and provide a broader base of understanding regarding our alumni career outcomes. Ongoing survey tracking alumni is an important part of our plan to enhance student support.
- Find ways to stay connected with graduates (e.g., LinkedIn, UMass affinity groups)
- Develop schedule for assessing the best readily available data, summarizing it, and refining our approach. Additional information we would like to have:
 - Current students: assessment of advising sessions, what additional information/support/tools do they need, retention rate of majors, and how career development factors into their curriculum planning.
 - Alumni: job placement/satisfaction over the longer term (e.g., 3, 5, 10 years out), continuing education needs, and feedback on how we can improve the undergraduate experience.
- Consider developing additional metrics for success under the new School of Earth & Sustainability.

Part III. Academic and Career Advising Action Plan

To achieve the goals outlined above, we've identified a number of actions. Some of these are achievable now, in the short-term, with existing resources; others are actions to consider over the next couple of years depending on resources and staffing. These actions are aimed at: SES, the ENVSCI program, faculty, students, and alumni/workforce contacts. Note: some of the goals and associated actions will be addressed by the individual program, jointly through SES, or in combination.

Short-term actions (with existing resources)

School of Earth & Sustainability

- Prepare the SES Workforce, Employer, and Alumni Engagement Plan. Solicit faculty and advisor input.
- Convene an SES faculty career development work group
- Share “best practices” for advising
- Pool together online resources related to career development, job search engines, and student engagement events (e.g., conferences)
- Meet with the UMass Amherst Career Planning and Placement Office
- Develop a SES alumni and employer database
- Create a plan and budget for alumni engagement and career tracking
- Develop a comprehensive, systematic approach to marketing and communications to maximize our reach to prospective students, especially high school seniors, transfer students (especially from community colleges), and undecided majors within the university.
- Create and support an SES workforce and alumni advisory group

ENVSCI Program / Faculty / Students

- Develop program-based strategies for increasing contact with students post-graduation to build alumnae support, provide a mechanism to better track career success (e.g., job placement), and an opportunity to learn from graduates how to improve our curricula for career preparation.
- Expand work with faculty to disseminate “best practices” advising guidelines to provide consistent, effective advising practices across all faculty.
- Increase the cultural awareness for ENVSCI students to “prepare” for each of their faculty advising sessions. Students enrolled in the required seminar classes are already tasked with developing a course plan and articulating their career goals and how they plan to approach professional development while in school, and then discussing this with their faculty advisor.

- Better articulation to students that “Advising” in ENVSCI consists of all the components discussed in this document –and not simply the half hour each semester that they spend with their assigned faculty advisor.
- Construct a page on the program website that explains how advising is organized in the program –so that it is evident to current and prospective students (and parents).
- Better utilize electronic calendars and appointment tools in the CUA office, to facilitate and manage the 25-30 half-hour appointments that are scheduled each week during the month of preregistration advising that occurs each Fall and Spring.
- Create LinkedIn presence to better communicate and track program alumni.

Mid- and long-term actions (some require additional resources)

School of Earth & Sustainability

- Hire an engagement specialist, who will help to establish a peer advising centers and a comprehensive framework for disseminating internship and job opportunities.
 - ↳ Long-term action: Expand the SES “Career Services Office” to two full-time staff members with at least one student assistant
- Launch workforce advisory group
- Plan and implement SES-wide career conference and exhibit fair
- Develop SES-wide online portal for posting jobs and internships
- Develop and launch career advising training sessions for interested faculty
- Host career development workshops for students (e.g., internship search process, resume and cover letter writing, etc.)
- Launch SES-wide survey of alumni career outcomes and maintain ongoing tracking
- Expand the number of students enrolled in curriculum and career planning courses and the number making a “career development plan”