

A Focus on Academic and Career Advising: Spring 2016

College of Natural Sciences

Part One. Analysis of the Current Landscape, “A [Deeper] Look in the Mirror”

The College of Natural Sciences (CNS) is a “Destination of Choice” for students who want to pursue studies in the life, physical and environmental sciences. The College has seen substantial growth in recent years and current undergraduate enrollment including both primary and secondary majors is over 7,000 students. Notable growth has recently occurred in Biochemistry and Molecular Biology; Biology; Mathematics and Statistics as well as students with an interest in Pre/Med and Pre/Health. Our two largest departments are Psychological and Brain Science – which currently has 1,600 students and Biology – which currently has 1,215 students. This growth at the undergraduate level reflects the importance of STEM disciplines nationally.

There is particular urgency in ensuring the continued success of students majoring in STEM disciplines given the global increase in demand for STEM graduates. In response, it is our goal to increase the retention and completion rates and overall success of STEM majors, with particular emphasis on the advancement of women and underrepresented minority (URM) students. Advising over 7000 undergraduate students is a challenge. Not only do we have students in 21 different majors, but we are also responsible for advising PreMed/PreHealth students. At this time we have over 1100 students registered on the PreMed/PreHealth track. The quality of CNS students as measured by GPA’s and SAT scores has risen. This has also resulted in an increase of CNS students being accepted into the Commonwealth Honors College. Although this is a great experience for students it is a very big challenge to meet the needs of students especially regarding advising and capstone classes that often require a laboratory experience. The College recognizes the importance of providing students with an advising program that enhances their college experience. Advising is more than just meeting requirements and checking off boxes. Students today need guidance in selecting the major that they will succeed in and have a passion for studying. Students need to be aware of the many co-curricular opportunities that supplement their academic work and will aid them when applying to graduate school or pursuing a career. Many students today are grappling with serious issues and advisors must be knowledgeable about resources on campus and be ready to assist students in distress.

Undergraduate Enrollment College of Natural Sciences 2011-2015

	2011	2012	2013	2014	2015
College of Natural Sciences					
Primary Majors	5,378	5686	5748	5815	6288*
Secondary Majors	353	414	536	586	640
Subtotal (duplicated)	5731	6100	6284	6401	6928
	2011	2012	2013	2014	2015
Associate's (Stockbridge)	131	138	112	92	87

* Includes 242 Exploratory Track students

Academic Advising

Division of Labor/Usage of Personal

CNS is committed to providing outstanding advising to students, but admittedly this is a challenge especially for our large departments and the fact that there is no incentive or reward for faculty advisors. Discussion has taken place regarding the use of professional advisors who can deal with the 'nuts and bolts' of advising and faculty acting as mentors for students. Our aim is to provide needed information and guidance to help students achieve their goals, to assist them in making the most of their undergraduate experience by taking advantage of all opportunities in the college and at the university and to help them make good choices regarding their academic work. At the same time it is the students' responsibility to take advantage of opportunities offered by the university, the college and departments. The 2015 CNS Graduating Senior Survey revealed that 93% of students indicated being 'very/somewhat satisfied' with their overall experience at UMass, 90% of students indicated they were very/somewhat satisfied with accessibility of faculty; 92% were very/somewhat satisfied with the quality of teaching, but 76% were very/somewhat satisfied with advising. There is quite a variation in departmental satisfaction rates, and we are working with all advisors to better meet the needs of students (See Appendix: 2015 UMASS Amherst CNS Graduating Senior Survey).

Advising is handled two ways in the college:

The CNS Advising Office located in the Morrill Science Center provides general academic advising, information about change of majors, referral information, co-curricular opportunities, academic discipline, etc. The CNS advising center is staffed with qualified, highly motivated individuals who consider student success their top priority. Morale and productivity are high and the office maintains a collegial atmosphere. However, CNS advising staff is serving the largest undergraduate college on campus with a relatively small staff. CNS advising staff are not able to devote full-time service to advising our students. Our staff are also serving in other college and university capacities including university service on councils and committees. In order to 'get students off to a good start' all freshmen and transfer students must attend a mandatory meeting in the beginning of the semester so academic policies and procedures can be reviewed. Every other week a newsletter is sent to all students in the College informing them of important deadlines and events. The College maintains contact with advisors to be sure that they are aware of services on campus, to accomplish that we have monthly meetings with chief undergraduate advisors and we have initiated a monthly newsletter that is sent to all 182 advisors. Early in the fall all advisors also receive an "Advisor Help List" with valuable information as well as "Advisor Hints" (See appendix). We have also organized opportunities for advisors to meet with representatives from offices across campus. Every semester a series of workshops are organized for students by the CNS Advising Office and by departments. Although offered, these seminars are often not well attended even though we diligently advertise the sessions via various social media outlets. This year, we initiated the CNS Academic Leadership Fellows Program (See appendix). This program targets freshmen and sophomore first generation, Pell eligible and URM's. The program was developed to reach out to students to help them succeed on campus and to develop their academic and leadership potential. The program got off to a bit of a rocky start given the organizer was on Family Medical Leave for the spring semester, but we were able to reach out to students and organized a number of events, including having some students meet with Dean Goodwin for lunch. CNS was also very active and took the lead in programming for PURF students and their mentors. We held a special workshop for mentors and a presentation on finding a research experience for PURF students.

Individual departments handle advising regarding major requirements but the quality of advising can vary. According to the latest "Three Year Aggregate Senior Survey"—some departments are rated highly

in the senior survey (Food Science, Stockbridge School of Agriculture, Geosciences), while others (Astronomy, Biology, Math and Stats, Physics, Psychological and Brain Sciences) have room for improvement. The obvious relationship between departmental size and advising satisfaction is striking. Advising methods varies greatly by department. There is also lack of uniformity in advising: some faculty are just better advisors than others. Biology and Psychological & Brain Sciences (PBS) utilize a central advising office where students can stop by without appointments to meet with advisors, however Biology has only one advisor and PBS has a team of advisors. Biochem, PBS and Math & Stats utilize peer advisors who can provide undergraduates with basic information. Other departments, such as Microbiology are thinking about starting a peer-advising model. Biochemistry and Molecular Biology and Math & Stats have professional academic advisors with faculty serving as 'secondary' advisors. Environmental Science, Building Construction Technology, Natural Resource Conservation and Microbiology utilize lecturers as chief undergraduate advisors but faculty in the departments are assigned students as well. Pre-Vet and Animal Science, Chemistry, Geosciences, Food Science, Physics and the Stockbridge School utilize faculty as advisors. Math & Stats use a hybrid model, where freshmen have a designated freshmen advisor and group advising is done, and then upperclassmen are assigned a faculty advisor. Environmental Science and BioChem host back to school events for students. Various departments offer seminars to students, for instance PBS offers workshops on "Making the Most of the Psych Major"; "What Seniors Need to Know"; "Study Abroad and Domestic Exchange". Several departments produce handbooks for students that contain checklists for students regarding requirements and other important information.

PreMed/PreDent is an issue that must be dealt with in terms of enrollment and advising. In Fall 2015 310 students enrolled at the University as PreMed/PreDent. These students are basically Exploratory Track students – last fall 240 students were admitted into the CNS ET track. So in reality CNS admitted 550 ET students that needed guidance. Advising these students is a real problem. The question is "*why admit students as Pre/Med*" instead of having them declare a major and having a means of informing students of PreMed/PreDent requirements? The PreMed advisors spend significant time communicating with students and working with upper-class students applying to medical school. Finding the time to work with freshmen is difficult. Two advisors in the CNS Advising Office have offered to help and group information sessions have been beneficial, but still this number of these 'undeclared' students is a burden. Another issue is the reliance of other colleges to send their students to the CNS PreMed/PreHealth Advising Office. For instance, this year 137 students from the School of Public Health and Health Sciences (SPHHS) have utilized CNS services. Perhaps the time has come for SPHHS to compensate CNS or to handle their own students regarding pre-med advising. Other colleges utilize PreMed advising, but to a lesser degree, include SBS, HFA and ENGIN. Students interested in nursing careers also will sometimes utilize the PreMed office, but we do not have the expertise in this area and feel that the School of Nursing could better service students interested in pursuing a nursing degree.

Students (and parents) today are concerned about career preparation and that students are provided with information regarding opportunities after graduation. This is a challenge for advisors. Faculty are just not knowledgeable or qualified to give career advice and CNS needs to explore ways to prepare students more effectively for opportunities after graduation. The college does offer a student panel on internships where current students can share their experiences. The Math & Stats Department hosts several events during the year related to careers, including a resume preparation event, an Actuarial Career Fair with 11 companies in attendance and a campus visit by an alumnus. The Actuarial Club has hosted visits by companies and an interview and networking event. Animal Science offers a course, AnSci 392, Animal Sciences Career Seminar that has certainly benefited students. Physics also offers career information in the Freshmen Colloquium - Physics 185. PBS does offer some group workshops

tailored toward career development, including “What Jobs can Psychology Majors Get?”. NRC offers a 1- credit seminar on curricular and career planning for students in the Environmental Conservation concentration. CNS does partner with Campus Career Services and a representative holds weekly office hours in the CNS Advising Office. We do include information from Career Services in our bi-weekly newsletter to students.

Data Analytics/Tracking

The College and Departments track students various ways utilizing different analytics. All students in academic jeopardy have a ‘dean’s hold’ placed on SPIRE. Students on probation and reinstated from suspension or dismissal must meet with a dean and must attend a time management/study skills workshop. PBS, Chemistry, Biology all track students’ progress in introductory classes since a minimum grade is needed in order to progress to the next level. Students not meeting the required grade are contacted. Almost all departments require students via RAC’s to meet with an advisor during registration - that ensures that students meet with an advisor at least twice a year (BIO and PBS do not place RAC’s on students’ SPIRE given the number of students in the majors). Exploratory track students are intrusively advised, urged to attend information sessions, and their progress to declaring a major carefully monitored. Moodle is used to communicate to ET students on a regular basis. SSC training has occurred in all CNS departments – a couple of departments are utilizing the platform and campaigns have been run, but to be honest, more usage of the platform would definitely help in reaching out to students, especially to identify students in the “murky middle” and to run various campaigns to ensure student success. Most departments utilize the ARR to be sure that students are meeting degree requirements, but greater use by advisors would be beneficial. It would be most helpful if the University committed to an early alert system where faculty would be required to provide feedback to students in a timely manner – namely before the mid semester date. Students in jeopardy in a course could be contacted about alternatives.

Experiential Opportunities

All students in the CNS are encouraged to participate in experiential opportunities including research, internships, independent study, study abroad, domestic exchange, etc. According to the 2015 Senior Survey, 61% of students participated in an internship or practicum; 60% did community service; 47% worked on research with a faculty member; and 16% studied abroad. An issue for CNS is providing research experiences for students given the increased enrollment in majors. This is especially of concern for students in the Honors College who must participate in a capstone project. Last year, CNS contacted all students to ask that they complete a survey of the internship experiences. This was beneficial in gathering information from students not doing an internship for credit. (<http://www.cns.umass.edu/students/internships>). We do receive information from Campus Career Services regarding students who do earn credit for internships. CNS could do a better job of working with IPO in identifying international partner institutions where specific courses have been pre-approved to satisfy departmental requirements. We would like to increase study abroad participation for men, first generation, URM’s, etc. Many of our students are engaged in volunteer experiences, especially students in Psychology and those interested in pursuing medical careers.

Informational Data/Resources

CNS has come a long way in securing seats in introductory classes, however some departments are at the point that access to upper level courses is limited (especially true in laboratory courses) and this could affect the four year graduation rate and student satisfaction. In terms of one-year retention rates, 57% of students stayed in their declared major, 32% changed departments, and 16% transferred out of

the college. These numbers are a bit lower than other college such as ENGIN and ISOM where students tend to be much more focused on careers. Regarding graduation rates, 77% of students who entered as first-year freshmen graduated in 4 years, of course there is variation by department. Another issue for CNS is transfer students not have the prerequisite courses in order to enroll in upper level courses or students not being confident in certain areas, such as math, and needing to take foundation courses. This can certainly affect graduation rates. The Office of Admissions has been working with community colleges on this issue to ensure that students who transfer to the University have the correct background and will graduate in a timely manner. Another issue related to transfer students is availability of upper level classes. Transfer students register after all other students and quite often there are just not seats available in classes that they need.

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

CNS runs a very effective New Student Orientation in the summer and in January. Advising deans meet with all student to provide basic information and to stress that if they ever need assistance to come to the CNS Advising Office. We require mandatory meetings in the fall and spring for all new students – freshmen and transfer students – where we review academic policies, provide information on resources on campus and stress the importance of making contact with departmental advisors. Departments could think about innovative ways of communicating with students – a welcome back email message, a fall reception, a finals' week get together – Biology has recently been planning end of semester events for students. Given the recent focus on student success many departments are rethinking how they advise students and developing plans for better communicating with students on a regular basis – this could include improving departmental websites, group meetings, utilizing SSC, peer advising, mentoring programs, dedicated advisors for transfer students/international students, etc. We do not think it is reasonable for faculty to be expected to utilize SSC, but rather at least a point person(s) in each department should be identified to use the platform and share the information. There are several CNS advisors (Wilmore Webley, Lena Fletcher, Deb Henson, Erin Battistoni) who are regular users of SSC. The issue here is finding the right person in each department and being sure they are properly trained and understand the benefit of running campaigns. The Freshmen Research Experience is another way that students can engage in research early in their college career. Of course, we would like all CNS students to engage in experiential opportunities but securing space in labs is a real issue given the enrollment in the college. We will continue to work with the Alumni Office to alert students to the networking opportunity and the importance of finding a mentor.

Part Three. Academic and Career Advising Action Plan

Specific actions no additional resources needed

- Departments will plan some sort of welcome to students in the fall and spring semester. This could be as simple as an email or some sort of social event.
- Training for faculty and advisors is needed so they are aware of, have access to, and utilize student success data that will aid them in servicing students. This will include SPIRE, UMETRX, SSC and OIR. Continue to have information sessions for faculty regarding resources on campus.
- All advisors will use SPIRE notes after meeting with students.
- All majors will list required courses in SPIRE (including concentrations)
- Using SSC all students in academic jeopardy (gpa < 2.3?) will be contacted by their department.

- Departmental websites need to be improved to include consistent messaging regarding pathways for advancement, change of major, contact information, research and internship opportunities, clubs, etc.
- Some departments might want to consider the development of continuation plans to control enrollment and to ensure a successful path to graduation.
- All new faculty/advisors will be trained via the CNS Advising Center.
- Explore peer advising in departments.
- Require faculty to provide feedback to students prior to the mid-semester date.
- Increase the number of students engaging in experiential learning.
- Increase interaction with departmental alumni.

Needed additional resources

1. Professional Advisors

It is our goal to increase the retention and completion rates and overall success of STEM majors, with particular emphasis on the advancement of women and underrepresented minority students. In order to do this and to ensure that all CNS students are provided with excellent advising during their college career, we are requesting to hire ten professional advisors. This will reduce the student to advisor ratio from 700 to 1 down to 350 to 1. These professional advisors will be the front line for students – assisting them in understanding major requirements and university policies. Faculty will continue to mentor students and will focus on providing important guidance to the students, including the pursuit of advanced degrees and other career opportunities.

2. Departmental Websites

Our department websites are the most visible and significant recruitment tool for attracting top-notch faculty and graduate students. Currently, four CNS departments have Websites created in Drupal 6, a version that stopped being supported by the Drupal community in March 2016. This means that Drupal 6 sites will no longer receive security updates. Additionally, UMass IT will no longer host Drupal 6 sites. Therefore, it's imperative to upgrade the department sites currently in Drupal 6: Biochemistry & Molecular Biology, Biology, Physics, and Veterinary & Animal Sciences. The upgrade will ensure the following: conversion of the Websites to a supported version of Drupal; reformatted to a mobile friendly design so that they are easily accessible on tablets and smart phones; redesigned to take advantage of new functionality and technological advances.

3. Pre-medical and pre-health advising

The PreMed/PreHealth office currently serves 1100 students. The staff consists of one part-time faculty advisor and one full time professional advisor. Funds are requested to add one additional professional advisor and part time (20hours) writer in the summer to help with letters of recommendation.

4. Career Advising

CNS must hire two full time career counselors to meet the increased needs of students. Given the undergraduate enrollment in the college it is essential that we have a career center to assist students in career development and experiential learning. Students need help in developing professional skills in order to be prepared to pursue internships, coops, and employment opportunities. The career advising needs of undergraduate students in the sciences are very similar to the needs of students in engineering and business. And yet there is no dedicated career advising or internship placement for the nearly 7000 CNS students. This investment would provide two career advisors.

5. Support for Upper Level Courses

Over the last few years, there has been significant support for increasing enrollment in lower level courses, but support is now also needed for upper level courses, especially in physics, chemistry, microbiology and biochemistry. Not having enough seats definitely can affect graduation rates and student satisfaction.