The Department of Horticulture in the College of Agricultural Sciences at Oregon State University has a long history of successful undergraduate education. The department’s undergraduate students typically enjoy above-average achievement with respect to GPA relative to the university in general, a high rate of graduation in their majors of choice, and numerous and diverse employment options following graduation. Many of these graduates are now employed in signature Oregon fields including the nursery, viticulture, turf, municipal, golf, and resort industries. The department’s faculty are widely respected professionally, and the department as a whole fills a niche unique to the West Coast. The department’s undergraduate education and advising is built on a centralized model, where a relatively small number of faculty assume a disproportionate share of the undergraduate education responsibilities. While this model has served the department well for many years, the review team noticed a few problems that may result from this workload distribution. The department is facing a significant demographic shift, with many faculty retiring in the next several years. This may present a significant opportunity to re-evaluate the undergraduate education model, with the next generation of Horticulture faculty playing a large role in shaping the department’s operation over the next several years to few decades.

Introduction

The Department of Horticulture (hereafter DoH) in the College of Agricultural Sciences (CAS) at Oregon State University (OSU) undertook a combined Graduate and Undergraduate Academic Program Review (APR) process in the 2005/06 academic-year, coincident with a review by the USDA’s Cooperative State Research, Education and Extension Service (CSREES). This review process began with a self-study of the department by its own faculty and staff, culminating in the production of a document that was distributed to the review team in March, 2006. This document is more extensive and detailed than this report is intended to be, and should be referred to if more information is desired. Additional information can be found at http://oregonstate.edu/dept/hort/.

The review team met 10-13 April, 2006, in Corvallis, Oregon, to carry out a site visit. This consisted of a series of interviews with faculty, staff, and students in the DoH, preliminary and
exit interviews with the Dean of the CAS, the Department Head, and several on- and off-campus meetings of the review team alone.

The combined undergraduate and graduate review team was assembled by the OSU Office of Academic Assessment (OAA) and the Curriculum Council (CC). The team consisted of five members of the OSU faculty, and four external reviewers from peer-departments at other universities. The OSU review team members were: Burke Hales (Associate Professor, College of Oceanic and Atmospheric Sciences; CC member and undergraduate review team chair); Starr McMullen (Professor, Department of Economics, college of Liberal Arts; Graduate Council member and graduate review team chair); Donna Champau (Associate Professor, College of Health and Human Sciences; undergraduate review team member); Dan Rockey (Associate Professor, College of Veterinary Medicine); and Bill Warnes (Associate Professor, College of Engineering; graduate review team member). External review team members were: Susan Galatowitsch (Associate Professor, Department of Horticultural Science, University of Minnesota; member of graduate and CSREES review teams); Rebecca Grumet (Professor and Associate Department Head, Department of Horticulture, Michigan State University; member of graduate and CSREES review teams); Marvin Pritts (Professor and Chair, Department of Horticulture, Cornell University; member of undergraduate and CSREES review teams) and Curt Rom (Professor, Department of Horticulture, University of Arkansas; member of undergraduate and CSREES review teams). Also present were Susie Leslie (OAA) and Mina McDaniel (Director, OAA).

The purpose of this review document is to evaluate the DoH’s functioning with regard to undergraduate education. The intent of this report is to highlight the positive aspects of the DoH, identify weaknesses, and challenges, and make constructive recommendations that the Department, College, and University may choose to implement to improve University-wide undergraduate education. The report will initially present some basic observations gathered from the self-study and during the site visit, followed by a detailed summary and recommendations section. The undergraduate review team members are primarily responsible for its content, although the graduate review team members have also provided input.

**Undergraduate Teaching and Advising**

In the current OSU catalog, the DoH offers 21 undergraduate courses, with an additional two taught by DoH faculty cross-listed with the Department of Crop and Soil Sciences, and one course cross-listed with Crop and Soil Sciences and Biology taught by an emeritus DoH faculty. In addition, six undergraduate courses with HORT course numbers are cross-listed with, and taught by faculty from, other departments. Several undergraduate course offerings are taught as ‘slash’ courses; that is, they are taught concurrently with graduate-level versions of the course. Courses are generally taught one quarter per year; this, and the course credit hours and enrollment capacities listed in the OSU catalog, amount to a potential of over 1900 student credit hours of undergraduate curriculum offered by the DoH each year. Recent statistics listed in the self-study document report about 1950 SCH in the 04/05 academic year, indicating a high level of subscription to DoH curriculum.

The DoH offers undergraduate degrees in Horticulture with a number of different options for specialization. The primary distinction is between the highly focused and applied Turf and Landscape Management option, and several more-general options that originated from the traditional Horticultural Science program a few years ago. These include Integrated Horticultural Production, Viticulture and Enology, Horticultural Research, and Horticultural Communication. In addition, three new horticulture options are under consideration: Therapeutic and Social Horticulture, Ecological Horticulture, and Ecological Landscapes and
Urban Forestry.

Advising is handled centrally, with Debbie Maynard serving as primary advisor for all undergraduate students.

**Faculty**

There are a total of 80 academic faculty in the DoH, including teaching, research, extension, and support personnel. On-campus teaching faculty consists of 18 tenured and five tenure-track professors, and one fixed-term instructor (Debbie Maynard, DoH undergraduate student advisor). Of these, 19 are regularly involved in undergraduate education, accounting for 5.255 FTE in undergraduate teaching and advising support. Within this group, five faculty members (Stang, Cook, Sandrock, Proebsting, and Righetti) account for about half of these FTE. In addition, the DoH boasts a large number of active Emeritus faculty, and several Extension and off-campus courtesy-appointment faculty.

The demographics of the department will play a key role in shaping teaching in the department in the future. The apiarist position is vacant due to retirement. Faculty who account for 0.65 FTE of undergraduate instruction are retiring in the immediate future (by 12/06), and Drs Jack Stang and Tom Cook (1.4 FTE) are expected to retire within the next few years. Recent hire Dr. David Sandrock is carrying a similar (ca 0.7 FTE) responsibility, and two new hires are planned in the next 1-2 years to compensate for anticipated retirements.

Faculty teaching effort appears to be high, with the approximately 2000 SCH/yr supported by only a little over 5 FTE dedicated to undergraduate education resulting in about 400SCH/FTE/yr. This is in line with other departments on campus.

Consideration of professional development issues for undergraduate teaching faculty reveals one notable statistic. While the proportion of full professors seems reasonable for a faculty of this seniority, the two faculty who have, apparently throughout their careers at OSU, carried the largest undergraduate teaching responsibilities are both near retirement and currently at the rank of associate professor. The review team did not seek explanations for this, and readily acknowledge that there are many valid reasons that senior faculty choose not to pursue promotion to full professor.

Diversity of the DoH faculty is low. Of the 23 on-campus professorial faculty, five are female and only three appear to have non-european ethnic backgrounds. No traditionally-disadvantaged ethnicities were recognized in the on-campus DoH faculty. This does not appear to be unique within the CoS, and may reflect little other than the demographics of the faculty-candidate pool.

**Students**

In the last ten years, about 30 undergraduates have entered the DoH as new majors each year, with a high enrollment of 40 in 200/01, and a low of 24 in 1999/2000. Essentially all of the applicants to the DoH degree program are accepted. Degrees were awarded at about the same rate, with a high of 43 in 97/98 and a low of 25 in 2004/05, indicating a high rate of successful degree completion by DoH students. There are, currently and historically, about 100 undergraduate majors in the DoH in any academic year, with a low of 81 in 1992/93, and a high of 153 in 2000/01. DoH students appear academically competent, with a department average GPA that is slightly higher than the OSU average. The combination of these statistics suggests that the DoH is doing a good job of recruiting high-quality, focused students who are well-equipped and driven to complete the DoH curriculum. A slight majority of the BS degrees awarded to DoH students each year are in the Turf and Landscape option, with the remainder in
the various Horticultural Science options.

Student post-graduate opportunities appear to be variable depending on which curricular option is chosen. Turf students highly employable and strongly retained owing to demand from the golf course industry and various municipalities. Landscape management degree recipients seem to be retained in degree-specific fields to a slightly lesser degree. Degree recipients in the various Horticultural Science sub-options are mostly employed in agricultural applications, but are more difficult to track and statistics regarding their employment history are considered unreliable.

The review team met with two student groups—graduates and undergraduates—in informal focus-group interviews. The undergraduate students were motivated, focused, and positive about their studies. They were satisfied with the career opportunities in their chosen degree paths, and with the exposure to these options via connections maintained by the department.

The review team did not view student dissatisfaction as particularly high, but specific areas were noted. Students did not report good experiences with undergraduate/graduate ‘slash’ courses, feeling as though the distinction between expectations of the graduate and undergraduate students was not totally clear and often left them feeling overwhelmed. Some students expressed concerns about a lack of participation in research projects, especially those enrolled in the Horticultural Science options. Students noted a lack of exposure to a diversity of faculty, stating that the entire curriculum could be taken from only a handful of the on campus professors. Finally, students noted a lack of Spanish-language instruction specific to horticulture.

Student diversity is low, although there appears to be a statistically greater representation of women in the undergraduate student body than in the faculty.

Facilities

The review team toured two classroom facilities, one in the basement of the ALS building, which was coupled with a teaching lab (described below), and one lecture facility on the 4th floor of ALS. The external review team noted deficiencies in the basement classroom/lab facility, and the Horticulture faculty noted deficiencies in the 4th floor lecture facility. As the team did not observe any classes in session in any of these facilities, it was difficult to fully assess them.

Two field-lab facilities were toured extensively, the Lewis Brown Farm turf facility and the Oak Creek Center for Urban Horticulture (OCCUH). The Lewis Brown Farm is an established experimental site that has been extensively used for upper-class field projects, primarily under the direction of Mr. Tom Cook. Specific examples shown to the review team were a sand trap and a putting green planned and created by students. These projects allowed the students to get hands-on experience with designing such structures, with important lessons learned about drainage, topography, and turf selection. Mr. Cook, who led this tour, showed an excellent example of how the selection of the most-commonly used putting turf, a variety of bentgrass, was less successful for putting greens in the local climate than was a native, quasi-annual grass, a type of annual Poa. The former choice required much greater watering, weeding, and chemical treatment maintenance than the latter. The OCCUH facility is one being newly renovated by Dr. David Sandrock. Although the team observed this facility only in its preliminary stages of development, it is clear that Dr. Sandrock has a vision for this site’s incorporation into the undergraduate curriculum.

In addition to these field facilities, there were numerous sites around campus where undergraduate students in the department were undertaking landscaping projects. For example, several beds around campus were the subjects of graded student projects, and one lawn was being developed as an eco-turf site. This turf consists of a mixture of grasses and broadleaf
herbs, each with different and complimentary nitrogen production and consumption demands, dormancy periods and root depths. This combination is intended to minimize chemical treatments, watering demands and mowing frequency. The fact that the University and the DoH have undertaken this project in the front lawn of one of the signature buildings on campus, Weatherford Hall, is particularly commendable.

There are several other facilities that undoubtedly bolster the DoH, but the review team did not extensively tour these. The team did a brief walk-through of the on-campus greenhouses. Research labs were not toured at all. The large extension network probably has some availability for undergraduate education, but this was not made clear.

Administration
The governance structure of the DoH is fairly flat, with a Department Head to whom several groups report directly. These include the on-campus faculty and clerical staff, Experimental station faculty, County extension faculty, Research Farm personnel, and a network administrator.

Summary Findings and Recommendations
The DoH was viewed as a strong academic unit for many reasons. The department appears to consistently attract a high caliber of undergraduate students choosing Horticulture as a major. Near 100% graduation rates for these students suggests that the DoH is providing the curriculum that these students expect, and is doing a good job of keeping students within the major once selected. The department’s unique curriculum on the west coast assures that a steady stream of quality undergraduate applicants will seek out OSU’s DoH. The high employability of DoH degree recipients and the apparent persistence of DoH graduates in related careers years after graduation, particularly within the Turf and Landscape Management option, is a clear indicator of the strength of the department. The situation of the DoH in a geographic area where horticulture is such a strong part of the local economy, and the connection of the DoH with the state extension service (although not extensively reviewed here), gives the department strong connections to the community. This, coupled with the department’s activities relevant to the wine and golf industries, makes the DoH one of the largest potential ‘high-visibility’ departments within OSU. The review team was impressed with the DoH’s attention to environmentally-sensitive landscaping and turf management approaches. Finally, the review team saw evidence of good collegiality among the faculty and students, essential to a functioning department.

Despite the long historical record of success in undergraduate education within the DoH, the review team did note some potential shortcomings that affect the undergraduate educational experience and faculty development, and these could become even more important in the future. The team members noted a sense of self-satisfaction among some of the more senior faculty, and were sympathetic in light of the department’s record. Many of these senior faculty are within sight of retirement, however, and it was not clear that junior faculty and future hires would necessarily share this sentiment. The impending demographic shift of this department provides motivation for a re-evaluation of the department’s model of undergraduate education. This should be done while there is still enough institutional memory of the current approach to assist in the new faculty’s development of the model under which they will operate in the coming decades.

In the assessment of the review team, the centralized model of undergraduate education and advising may contribute significantly to several of these shortcomings. The fact that undergraduate students are exposed to only a few faculty in the DoH is one clear result of the undergraduate FTE being concentrated on a small number of professors.
As another example, the group heard that undergraduates, particularly in the Horticultural Sciences options, had a strong desire to participate in research. Later we heard from the graduate faculty that they were experiencing a shortage of research assistants and that was limiting productivity. When asked why the undergraduates weren’t being utilized, the team was told that the graduate faculty had no idea that there was interest among the undergraduates. This situation suggests that information that may be known to the small core of undergraduate instructors and advisors is not being widely distributed to the DoH faculty as a whole.

The professional development of the undergraduate teaching faculty is a concern. The fact that two senior undergraduate teaching faculty will attain the rank of full professor only late in their careers, if at all, gives the appearance that a 0.7FTE teaching commitment comes at the expense of scholarly research that can be assessed by colleagues in peer institutions. It would be unfortunate if the high expectations for Dr. Sandrock’s teaching responsibilities ultimately limited his promotion and professional development. It is also a concern for recruitment of new faculty—would the best candidates in the application pool be as likely to come to the OSU DoH if this information was fully known? This will be critical to address in light of the projected retirements and the need for new hires in the next few years. Last, the move towards seven Horticultural Science sub-options seems excessive in light of the small number of faculty and advisors that will be involved with teaching this curriculum.

Finally, classroom facilities seemed subpar in comparison to those at peer institutions. The review team is fully aware that the DoH has little control over this particular issue and that the University’s financial state offers little immediate hope for improvement, but this issue should be recorded regardless.

**Recommendations**

The review team offers the following recommendations for the DoH’s and the University’s consideration:

1) Continue the excellent undergraduate curriculum that has made OSU DoH regionally unique and its graduates sought after in the work force.

2) Sustain the turf lab field laboratory, and fully develop the OCCUH facility. These field lab facilities and the curriculum based upon them are key strengths of the DoH.

3) Expand on the work with the local agricultural industries through the extension service, student internships, and placement of graduates.

4) Consider increasing the visibility of OSU and the DoH through the department’s involvement with high-visibility and high-income markets such as viticulture and the golf-resort industry. This may represent an untapped potential fundraising source.

5) Re-evaluate the centralized model of undergraduate teaching and advising, with the objectives of greater student-faculty interaction, more participation by undergraduates in research, and better faculty development.

6) Devise a five-year plan for improvement of classroom and teaching-lab facilities.