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Environmental Sciences Undergraduate Program (ESUP) Action Plan 2019:
Response to the 10 Year Program Review Recommendations, 24 February 2020
by Larry Becker, Director, ESUP

This “Action Plan” is a central part of the 10-year program review procedure designed by the Oregon State University’s Office of Academic Programs and Assessment. The purpose is described in the Undergraduate Academic Program Review Guidelines (UAPRG):

The Action Plan needs to address each of the Review team’s recommendations to improve program quality and include specific actions to be taken, by whom, and over what time frame. It needs to include goals, objectives, and reliable and meaningful measures to identify whether the goals and objectives have been met. It also needs to address this work in the context of the College’s and University’s strategic objectives. (UAPRG 2017: 19):

Following the UAPRG, the ESUP Action Plan 2019 includes a summary of the program’s review process, reviewers’ recommendations, and a description of steps to meet the recommendations, as well as how the effectiveness of those steps can be ascertained. The UAPRG recommends the use of a table in the format provided on pages 6-8. The UAPRG also notes that the Action Plan can have two tiers, “one based on current resources and one based on conditional resources not under the program’s control (e.g. additional funds allocated by the Dean).” Where the program depends on resources outside its control, the UAPRG advises that the program indicate that “recommendation requires resources that are outside of the direct control of the program.” In addition, it asks that the Action Plan “Develop two contingent actions for [such a] recommendation, one that assumes the resources will be allocated, one describing actions that will be taken without additional resources.”

Summary of the ESUP’s Review Process

The following description is adapted from pages 17-18 of the “Environmental Sciences Undergraduate Program: Self-Study Report, 2007-2017” submitted to the OSU Office of Academic Programs and Assessment, the CEOAS administration, and ultimately the program review team in February 2019.

The review process began with an initial meeting in April 2018 between the Director, Larry Becker, and the Office of Institutional Research that compiled data on the program. In July 2018, Larry met with Janine Trempy, then Associate Provost for Academic Affairs, to review the

requirements and timeline of the review process. In August, Larry began to assemble information for the self-study and contacted faculty and staff who would contribute. Ultimately these included Stacey Schulte for obtaining and presenting data, academic advisors Mary Chuinard, Dawn Marie Gaid, Erin Lieuallen, Casey Menn, and Andrea Nelson for material in many sections as well as comments on drafts of the self-study, instructors of key courses offered by various OSU colleges, plus other individuals mentioned in the self-study's acknowledgements who provided materials

Four and a half weeks before the review team's on-campus visit in March 2019, Larry sent a complete draft of the self-study to the following: Alix Gitelman, Vice Provost of Undergraduate Education; Roberta Marinelli, Dean of the College of Earth, Ocean, and Atmospheric Sciences (CEOAS); Eric Kirby, Associate Dean for Academic Programs, CEOAS; Kaplan Yalcin, Assistant Dean of Instructional Programs, CEOAS; Caryn Stoess of the Office of Academic Programs and Assessment; all of the CEOAS Academic Advisors; Environmental Sciences Advisory Council members Lisa Gaines, Alyssa Shiel, James Cassidy, Jenna Tilt, Carlos Ochoa, Amira Smith, and Erin Lieuallen; Jessica DuPont, Marleigh Perez, Alfonso Bradoch, and Shannon Riggs of OSU Ecampus; Ron Reuter of OSU Cascades campus; former ESUP Director Pat Muir; and former CEOAS Head Advisor Cori Hall.

The review team consisted of: George Roderick, Professor and Chair, Environmental Science, Policy, and Management, University of California at Berkeley; Joe Bowersox, Professor and Chair, Environmental and Earth Sciences, Willamette University; Rebecca Mathern, Associate Provost and University Registrar, OSU; and Terry Rooker, Instructor, Computer Science, OSU. They conducted the campus visit, interviews, and consultation 18-20 March 2019. In early April, the team sent its recommendations to the Office of Academic Programs and Assessment which in turn sent them to the CEOAS administration and me. On 3 April 2019, I sent the recommendations to the ESUP Advisory Council and the CEOAS academic advisors. In April and May, the academic advisors and I discussed the recommendations, and on 13 May, the Advisory Council met to discuss the recommendations.

Since July 2019, I have prepared the responses to the recommendations in the Action Plan in consultation with the ESUP Advisory Council. Additional input came from the CEOAS Head Advisor Mary Chuinard, Kaplan Yalcin (CEOAS Assistant Dean for Academic Programs), Troy Hall (Director of the Natural Resources undergraduate major, and Chair of Forest Ecosystems and Society), Selina Heppell (Chair of the Department of Fisheries and Wildlife Sciences, including the undergraduate major and associated certificates), Julia Jones (GEM Discipline Director), and Jane Waite (Senior Associate for Social Justice Learning & Engagement, Office of Faculty Affairs). On 30 October 2019, a draft version of this Action Plan was discussed in a 50-minute meeting that included CEOAS Dean Roberta Marinelli, CEOAS Associate Dean for Academic Programs Eric Kirby, Assistant Professor Alyssa Shiel (member of the ESUP Advisory Council), and Kaplan Yalcin. Following revisions to that draft based on comments and suggestions made at the 30 October meeting and in an email from Roberta on 8 December, I met again with Roberta and Eric on 16 January 2020. The 16 January meeting left open questions about the range of Full-Time Equivalent (FTE) for a new Associate Director position, changes to my position as director, and the addition of a new 200-level course. On 4 February, Eric reported that he and Roberta had met to discuss these questions thus providing me with information for this Action Plan. The Advisory Council reviewed the final version (6-18 Feb).

Reviewers' Recommendations

The following is copied (5. Recommendations, pp. 8-9) from the reviewers' report:

This section serves as the foundation by which the program will develop its Action Plan, with the identified strengths, weaknesses and challenges of the program providing a rationale for each recommendation suggested by the Review Team.

3 Areas:

1. [Decanal Level] Increase administrative support to level needed for program sustainability.

The program is not sustainable in its current form. The profile of the program should not only be maintained but raised where it can be seen as a national leader versus a hidden gem. There are some distinguishing features that highlight the hallmarks of the program, and administrative support can provide opportunity to ensure its promotion. Ideas for improved support could include, but should not be considered directives or specific solutions:

a) Provide considerable FTE for program management that includes director level work and support for professional advisors. Supporting a 750 student program on a 0.25 FTE director position is irresponsible.

b) Provide additional FTE for ES courses that thread through the orientation course, midpoint course and the capstone course(s) that include project work but also program outcomes reflection and career preparation. The Natural Resources model in the COF could provide some guidance to identify a reasonable level of financial support for a program.

c) Provide operational budget line for growth and development of the program, such as funds for faculty engagement and collaboration among the colleges who teach courses students select, student scholarship funds, professional development funds for enhanced support, and funds that support the college-level recruitment strategies (students felt this was needed).

2. [Decanal Level for support and Director level for action] Incentivize and facilitate engagement of faculty.

Faculty within the college and those teaching necessary ES courses in other colleges are not engaged to the extent they need to be. Ideas for improved support could include, but should not be considered directives or specific solutions:

a) Establish an undergraduate program committee (with a curricular mandate distinct from the charge for the advisory council).

b) Ensure that succession planning or cross-training occurs for eventual changes in leadership.

c) Incentivize faculty to consider ES needs in their course syllabi by providing teaching assistants to large courses of high value to the ES program.

d) Fund quarterly faculty collaboration events that include social activities for relationship and program development. Include opportunities for ES students to better know the faculty in other colleges (for the purposes of student success, career planning, etc).

e) The capstone course model should be embraced but also include a threaded course that acts as the breadcrumbs between the orientation course and the capstone, in which students experience implied cohort development in a mid-program course that helps them draw program objectives together regardless of their specializations. These should be required courses for all students and include career preparation and awareness in the senior year.

f) Reassess the value of specializations and whether there should be many or few. Arguments could be made for either approach. Ideas that were addressed by stakeholders were environmental chemistry, humanist/social justice, marine sciences, and law. These could serve both existing students and attract a more diverse population of students.

3. [Decanal and Director Levels]. Provide support for student success.

Numerous existing structures and practices limit the eventual success of students. Examples could include, but should not be considered directives:

a. Explore coordinating ES Undergraduate Program with ES Graduate Program with possible move of graduate program to College, with benefits to both the undergraduate and graduate programs such as teaching opportunities for graduate students, mentorship opportunities for undergraduate students, and better conversations related to environmental science careers for both UG and GRAD.

b. Review opportunities for synergies and efficiencies through collaboration with other interdisciplinary undergraduate programs including ES, Marine Sciences, Natural Resources, Sustainability Studies (2 programs). It was clear that the ES and NR programs had some duplicative efforts but there is clearly a need for both programs and it is important to differentiate them, help students understand those differences, and then advise collaboratively to promote student success in whichever program they land.

c. Review opportunities for synergies and efficiencies through collaboration with departments that teach key courses in each ES Specialty. This opportunity is ripe for success especially if ES graduate students who have interests in these specialties can be leveraged to maximize those synergies.

d. Review ES Specialities on a regular basis, with attention to campus opportunities and relevant topics paying close attention to market research and graduate programs that are growing. This should include the consideration of the importance of GIS in ES programs and whether it needs to be a program requirement or only optional coursework. Additionally, the Marine Studies initiative at OSU can only be improved with the inclusion of the ES program participation. This review should also include the sequencing of courses so that ES students are not ill-prepared for the rigorous courses they choose to take in their specializations (i.e., physics sequence might be necessary for full success in certain specializations).

e. Provide welcoming space for ES student study, collaboration, and community building. This was a constant concern brought up during the program review stakeholder discussions. Consideration for creating a physical environment for on campus students to study, community build, collaborate, and perform critical lab projects appears woefully necessary if a disparate program wants to draw a thread between their student population.

f. Overlay an equity lens into the decisions made related to student success and this program.

There is a desired interest to better serve students of color and growing those populations in the program will require assessment of how those students are currently attracted to the program and served.

g. Coordinate with campus development and alumni centers to track students in their careers and eventual development capacity.

This ends the direct quotation of the reviewers' report. The following is the plan of action.

Steps to Meet the Recommendations

The ESUP Action Plan 2019 response to meet the recommendations of the program review follows the 3 main recommendation areas:

- Increase administrative support to level needed for program sustainability;
- Incentivize and facilitate engagement of faculty;
- Provide support for student success through revisions to operations.

The first 3 responses to the recommendations have financial impacts. The 13 other (#4-16) responses contain no (or unclear) financial impact. All budget allocations are beyond program control. The ESUP Action Plan 2019 contains commitments to meeting the recommendations summarized in the following table and further elaborated in the section after the table.

Action (response to recommendation)	Metric	Anticipated Outcome/Goal	Who	When
#1 Increase FTE for managing ESUP <i>Response to 1a</i>	FTE for managing the ESUP increases from the current 0.25. Additional FTE for the Director will be determined in a subsequent meeting involving the Dean, Assoc. Dean for Acad. Progs, ESUP Dir., Geog. Dir., and HR. A new Associate Director will be created at 0.10-0.20 FTE.	Provide greater capacity to serve program needs, notably by developing and managing expanded curriculum; improving recruitment and retention of students from under-represented groups; raising scholarship money to motivate student achievement; developing stronger ties among faculty in different units through quarterly gatherings and Advisory Council communication; developing alumni relations; and preparing for succession of director.	Dean	April 2020
#2 Increase FTE for teaching in ENSC to create new 200- and 300- level courses <i>Response to 1b</i>	Addition of a 200-level ENSC course to create a string of ENSC courses and renumber ENSC 479. ENSC 2XX could be a 4 crs. environmental sciences field & lab course, such as a modified and renamed GEO 221. Also, modify and change the course number of Environmental Case Studies, ENSC 479 (3 credits, WIC) to ENSC 379.	Create a core thread of required ENSC courses as steps in the progression toward completion of the Bachelor's degree taught by dedicated Environmental Sciences faculty. The 200-level course would provide a long-desired sophomore experience in the major with fellow ESUP students. ENSC 479 would be renumbered as a 300-level course, and include a career preparation learning outcome.	Dean	Fall 2020
#3 Provide operational budget line for growth and development of	Response outside the direct control of the program: a) If resources allocated,	Establish greater ability for the program to attract and support aspiring students, diversify the student body, and incentivize faculty teaching ESUP students.	Dean	July 2020

the program <i>Response to 1c</i>	establish a \$5,000 annual budget to be managed at the discretion of the program directors; b) If without resources allocated, Director will continue to work with OSU Foundation to raise private donations.	Expenditures would support recruitment, student research, faculty development, and scholarship gifts until other sources are available as awards for Excellence & Engagement.		
#4. Further chart the role of the existing Advisory Council rather than create a new committee. <i>Response to 2a</i>	Define specific curricular responsibilities in the existing Advisory Council with potential for additional members of the Advisory Council.	By designating the curriculum responsibilities of the Advisory Council, decision-making about curriculum will benefit from the experience of faculty members with diverse expertise. The interdisciplinary program will build from the knowledge of its interdisciplinary faculty.	Director and Advisory Council	June 2020
#5 Prepare for program leadership succession <i>Response to 2b</i>	Add an Associate Director (See #1). Train that person in the operation of the program.	Ensure that succession planning occurs for eventual changes in leadership.	Dean for support; Dir. for action	April 2020
#6 Offer GTAs to courses in exchange for meeting ESUP needs <i>Response to 2c</i>	Response outside the direct control of the program: a) If proposal to Provost to move ES grad. Prog. to CEOAS is accepted, then offer GTAs; b) if the proposal is not accepted then explore new ways to move the grad. ES Program to CEOAS (See #10).	If the graduate ES program were in CEOAS, the college could incentivize faculty in other colleges to consider ES needs by the provision of GTAs from a graduate ES program.	Dean & Provost	Fall 2021
#7 Host student-faculty mixers	Fund (See #3), plan, and hold 2-3	Foster relationship-building among the faculty, and	Dean for support;	Fall 2020

<i>Response to 2d</i>	annual events that bring together ESUP students and faculty. Estimated cost of food is \$150, for max. two events--\$300 total.	between students and faculty for the purposes of student success and career planning.	Dir. & Exp. Ln. Crd. for action	
#8 Create a thread of courses from orientation to capstone <i>Response to 2e</i>	Add 200- and 300-level required courses (See #2).	Develop cohorts of students, draw program objective together regardless of specializations, and teach students career planning and awareness.	Dean for support; Director for action	Fall 2020
#9 Monitor specialization fields <i>Response to 2f</i>	Reassess the value of specializations and whether there should be many or few.	Continue to evaluate the program's specializations relative to the env. sci. field in general, student interests, and OSU faculty areas of expertise.	Director and Advisory Council	Dec. 2020 and ongoing
#10 Coordinate undergraduate & graduate ES programs in CEOAS <i>Response to 3a</i>	Response outside the direct control of the program (see #6): Explore bringing the ES Graduate Program to CEOAS.	Synergies from unified grad. & undergrad. progs. include: visibility, pathways for undergrads, GTAs for ENSC courses & those in other colleges with ESUP students.	Dean & Provost	June 2021
#11 Collaborate with allied programs <i>Response to 3b</i>	Evaluate collab. and coordination with allied interdisc. progs.	Differentiate the programs to aid student success in identifying the emphases of allied programs.	Director	Dec. 2020 and ongoing
#12 Collaborate with depts. participating in ESUP <i>Response to 3c</i>	Review synergies and opportunities for efficiencies with depts. that teach key courses in the ESUP.	If the ES Grad. Prog. comes to CEOAS (See #6 & 10), then the offer of GTAs to other colleges with high ESUP enrollment could influence curriculum for the benefit of ESUP students.	Dean for support; Dir. for action	Sept 2021
#13 Review specializations, required subjects, course sequencing <i>Response to 3d</i>	Review ESUP specializations, required subjects, and course sequencing on a regular basis giving attention to trends in the field.	The ESUP will continue to have specializations relevant to the field and demand, with students well-prepared to excel in environmental sciences jobs and research at the graduate level.	Director and Advisory Council	Dec. 2020 and ongoing

<p>#14 Create collaborative learning spaces <i>Response to 3e</i></p>	<p>Response outside the direct control of the program: 1) Provide welcoming space for ESUP students to collaborate and build community; 2) Consider space in Strand.</p>	<p>Collaborative learning spaces would help respond to student demands for a place to study, build community, and collaborate on projects.</p>	<p>Dean; include Director to plan</p>	<p>June 2022</p>
<p>#15 Overlay an equity lens into the decisions made related to student success to better serve students of color. <i>Response to 3f</i></p>	<p>Response outside the direct control of the program: 1) Increase recruitment and retention of Latino, African American, and indigenous students by working with high schools through CEOAS Outreach Coordinator and funding targeted scholarships (See #3), 2) In the absence of scholarship support, work with recently hired CEOAS Outreach Coordinator to connect with high schools.</p>	<p>Build on CEOAS' successful involvement with the office of Social Justice Learning & Engagement (more than any college or other unit at OSU) to increase the ethnic diversity of the ESUP student body by recruiting and retaining more students of color.</p>	<p>Dean for support; Director for action</p>	<p>Sept 2020</p>
<p>#16 Develop deeper alumni relations <i>Response to 3g</i></p>	<p>Work with the OSU Foundation to track students in their careers.</p>	<p>Establish an alumni data base in coordination with the OSU Foundation to improve development capacity.</p>	<p>Dean for support; Dir. & OSUF for action</p>	<p>Sept 2021</p>

Details of proposed responses

This Action Plan describes possible responses to the recommendations point-by-point. Because some of the recommendations overlap, the ways that they could be addressed are in some cases combined. Quotations indicate verbatim statements from the reviewers' recommendations.

1. [Decanal* Level] Increase administrative support to level needed for program sustainability.

* refers to decisions by the Dean

1a) Program management FTE. *Recommendation: "Provide considerable FTE for program management that includes director level work and support for professional advisors. Supporting a 750 student program on a 0.25 FTE director position is irresponsible."*

Background. In considering how to respond to this recommendation, I sought information about the levels of support provided for comparable undergraduate programs in other colleges at OSU, namely Natural Resources (College of Forestry) and Fisheries & Wildlife Sciences (College of Agricultural Sciences). ESUP had 750 students eligible to enroll in January 2019. As of December 2018, the undergraduate, interdisciplinary Natural Resources Program had 785 students eligible to enroll. In June 2019, the Fisheries & Wildlife Sciences Department had about 1,100 total students, including graduates, undergraduates (~200 Corvallis campus undergraduates), and certificates (~250 certificate students).

I spoke with Troy Hall (Director, Natural Resources) and Terina McLachlain (Coordinator, Natural Resources). Troy is a 1.0 FTE Department Head. When she assumed the department head role, the position description did not specify FTE to direct the Natural Resources Program; it was assumed as part of the responsibility. Troy and Terina estimate that her "strategic" role to administer Natural Resources occupies 0.25 of her overall 1.0 Department Head position. As Coordinator of Natural Resources, Terina manages what she called "the moving pieces": curriculum, Category II proposals, website, webinars for internships, and advising materials. Her 1.0 FTE position includes 0.75 FTE to manage the program (increased from 0.50 following a program review in 2016) and 0.25 advising. In sum, about 1.0 FTE is devoted to administering the Natural Resources program.

I also spoke with Selina Heppell, Department Chair of Fisheries & Wildlife (FW). Selina's 1.0 FTE includes 0.70 for administration--which is for the management of a department with 300 employees, including graduate students, and a \$6 million operating budget--and 0.15 for research; however, she has had no solo fieldwork for years and dedicates her "research" FTE to advising graduate students and occasionally leads a graduate seminar. Her position is significantly different from that of the ESUP Director. FW has a full-time Head Advisor and an Associate Department Head (25%, manages curriculum, scheduling, teaching assignments).

Please note that both FW and NR have at least one person with 1.0 FTE devoted to the respective programs. In my experience, the ESUP (800 students enrolled and eligible to enroll in the latest enrollment figures for W2020) cannot achieve its full potential--the role of "national leader" indicated in recommendation #1--until it has the full-time commitment of a

director dedicated to meeting the multifaceted needs of the interdisciplinary program. In other words, even beyond the increase in FTE to administer the program proposed above in the table, I strongly encourage consideration of a reorganization of the administration of the program so that at least one person is fully committed to it.

Currently, the ESUP Director's duties at 0.25 FTE as listed in the 2019 program review are:

- Sets strategic priorities and direction for the program;
- Evaluates and revises curriculum; prepares curriculum proposals as needed;
- Reports annually on program assessment;
- Teaches Environmental Sciences Orientation (ENSC 101) each fall term;
- Collaborates closely with CEOAS academic advisors regarding curriculum changes, questions of course equivalency, student concerns, and overall direction of the program. Meets every two weeks with the advisors;
- Collaborates with OSU Ecampus success team to assure coordinated efforts in support of online students;
- Advises Environmental Sciences majors in conjunction with the CEOAS academic advisors, with particular attention to scholarships, research pursuits, study away and internship interests, and individual student situations;
- Writes letters of recommendation for students;
- Serves as faculty advisor for the Environmental Sciences Club;
- Collaborates with faculty members who teach courses in the ESUP program and with allied programs. Meets quarterly or as necessary with an ESUP faculty Advisory Council;
- Informs the CEOAS Undergraduate Program Committee, Associate Dean of Academic Programs, and Dean of significant items of interest;
- Represents the ESUP on various college and university committees;
- Collaborates with OSU Ecampus marketing to present the ESUP in an attractive and accurate manner through the Ecampus website;
- Participates in summer incoming student orientations (START), as well as fall (Beaver Open House) and spring on-campus events for prospective students;
- Supervises instructor Randy Milstein's 0.3 FTE instructor appointment to teach Environmental Case Studies (ENSC 479);
- Coordinates with Cascades campus faculty lead for Environmental Sciences, Ron Reuter.
- Collaborates with community colleges to articulate courses;
- Works with the OSU Foundation to develop support for scholarships and other programmatic initiatives;
- Communicates with donors to the OSU Foundation account;
- Collaborates with college alumni liaison.

Proposed response #1: Increase FTE for managing ESUP for the Director and add a 0.10-0.20 FTE Associate Director, a future director in training.

Actions

- Increase current 0.25 FTE ESUP Director position.

- Create 0.10-0.20 FTE Associate Director position open to tenure-track faculty at OSU.

According to this plan, duties of the Associate Director would be primarily as follows:

- Curriculum updates. The operational aspects of curriculum can be better managed with a second person who would take primary responsibility for updates which are very time-consuming. Conceptual aspects of curriculum would remain primarily the responsibility of the director.
- Developing and teaching an online version of the Environmental Sciences Orientation (ENSC 101) course taught to incoming students. Developing eENSC 101 has been deferred for as long as I have been director due to lack of time/personnel. As an Ecampus course, eENSC 101 would create revenue to help support the cost of the co-director position.
- Coordinating the ESUP Advisory Council. The role of the Advisory Council, still relatively new to the program, has not yet been fully realized due to lack of capacity (time). As with the Steering Committee for Natural Resources, the ESUP Advisory Council could play a significant role in shared decision-making for this interdisciplinary program.

1b) ES curriculum thread. Recommendation: *“Provide additional FTE for ES courses that thread through the orientation course, midpoint course and the capstone course(s) that include project work but also program outcomes reflection and career preparation. The Natural Resources model in the COF could provide some guidance to identify a reasonable level of financial support for a program.”*

The ESUP would like to modify the curriculum (both online and on-campus) in such a way that a thread of Environmental Sciences (ES) courses engages students from the first term orientation (existing for Corvallis campus students and desired for Ecampus students), through a midpoint course or courses (to be considered), and a capstone course (planned) or courses; the total would thus be a minimum of 3 courses, but a desired 4 courses, one of which already exists and another that is already scheduled for 2019-20. The 200-level course would fill a gap for students who begin as first-year freshmen and are completing introductory science and math courses, plus university general education courses, but otherwise not coming together in courses focused on their chosen field of interest. Woven into this thread could be student projects, program outcomes and reflection, as well as career preparation.

Proposed response #2: Increase the FTE for teaching in ENSC from 0.5 to 1.0 FTE* to support 200 and 300-level ENSC course development and teaching that connect the existing 100 and 400 (capstone) courses.

*These FTE figures include GEOG 452 as the capstone, and assume that the course would be offered twice annually with half the enrollment ESUP students, thus 0.2 FTE. It counts FTE for the current ENSC 479 as 0.3, and the current FTE for ENSC 101 as 0.1.

Action-- Add FTE for development and teaching of 200- or 300- level courses focused on building the cohesion of the students' environmental science education. This would require a new instructor.

The current ENSC curriculum includes

ENSC 101 – Environmental Sciences orientation (1 cr.) (Larry Becker)

ENSC 452 - Environmental assessment (3 cr.) (proposed capstone) (Jenna Tilt, 0.2-0.3 FTE)

ENSC 479 – Environmental case studies (WIC) (3 cr.) (Randy Milstein, 0.3 FTE)

Proposed ENSC curriculum:

Actions combined--The following summarizes an ENSC curriculum thread after changes:

- ENSC 101 Environmental Sciences Orientation (1-credit)—exists at Corvallis, is being developed at Cascades, and would be developed for Ecampus by Associate Director.
- ENSC 221 Environmental Sciences Field & Laboratory (4-credits)—modify existing GEO 221; exists at Corvallis and Ecampus; would need to be developed at Cascades. If required of all students, its place in the program, impact on total credit hours, and FTE required would need consideration.
- ENSC 379 Environmental Case Studies (3-credits)—modify existing ENSC 479; exists at Corvallis, Ecampus, and Cascades. If required of all students, the place in the program and impact on total credit hours would need consideration.
- ENSC/GEOG 452 Environmental Assessment (3-credits)—currently in the Curriculum Proposal System for name change; to serve as capstone course including for program assessment purposes; to be offered at Corvallis and Ecampus; Cascades will develop capstone course.

Details of proposed actions:

- 1) Change the existing ENSC 479 to ENSC 379. ENSC 479 Environmental Case Studies is currently offered as a Writing Intensive Course (WIC) both online and at Corvallis face-to-face. This action would preserve the title and WIC status but the course would be modified to increase project work, outcomes reflection, and career preparation in response to the review recommendation.
 - a. ESUP currently supports an instructor at 0.3 FTE to teach ENSC 479 once/yr on campus and two times/yr online. If ENSC 379 were required for all ESUP students, given the enrollment cap of 25 students in a WIC class, it would require at least one more section and more than 0.30 FTE.
 - b. Alternatively, this could be an optional WIC course and ENSC students could continue to take other WIC courses offered in CEOAS, in which case 0.30 FTE would be sufficient.
- 2) Develop a 200-level Environmental Sciences Field & Laboratory course. Such a course would parallel similar courses for other CEOAS undergraduate majors. Importantly, it would provide an “equivalent” course for incoming students bringing with them transfer credits from similar courses taught in community colleges. It could fit into the existing ESUP curriculum in the Natural Environmental Systems section under the “Geosphere” category. Such a course could be an attractive conduit into the program for students initially taking it to fulfill the OSU baccalaureate core requirement in the Perspectives

section as a Physical and/or Biological Science with lab course. Kaplan Yalcin has indicated interest in teaching such a course, changing the existing Environmental Geology (GEO 221) to Environmental Sciences Field & Laboratory (or other course title) ENSC 221. Such a course might also provide a suitable response from CEOAS to the College of Agricultural Sciences' SUS 102 Introduction to Environmental Science and Sustainability, the title of which creates confusion for students in, and considering majoring in, ES.

1c) Budget for program. *“Provide operational budget line for growth and development of the program, such as funds for faculty engagement and collaboration among the colleges who teach courses students select, student scholarship funds, professional development funds for enhanced support, and funds that support the college-level recruitment strategies (students felt this was needed).”*

While oriented toward the inter-college/interdisciplinary structure of the ESUP, this recommendation appears to align with a CEOAS-wide topic recently raised in the UPC that also includes how to provide and manage funds for undergraduate scholarships and research. A budget for student scholarship funds and recruitment strategies is a high priority (see item 3f).

With an operational budget line for growth and development of the program of \$2,500-3,500 annually the program would improve its ability to attract and support aspiring students, diversify the student body, and incentivize faculty teaching ESUP students. Expenditures would support recruitment, student research, and faculty development. It was with such targeted discretionary funding that CEOAS offered a high-achieving high school student from an underrepresented demographic group considering OSU's ESUP and helped lead to that student ultimately deciding to come to OSU. In a similar manner, another student from an underrepresented group was able to participate in a study abroad program because of a modest grant thus gaining self-confidence and ultimately graduating and obtaining a job using skills learned in ESUP. Other students have presented research findings at conferences because of small (approximately \$500) grants made available from discretionary college funds.

Although ESUP has a great need for support for student scholarship funds (discussed in #3f), the request here is for an operational budget.

Proposed response #3: Provide an operational budget line of \$5,000/year to support growth and development of the program

Action

- Create a budget to be managed at the discretion of the program directors to support student recruitment, travel and equipment for student research projects and presentations, Excellence & Engagement awards (if no other source), and faculty development for those teaching courses with high ESUP enrollment. Cost: \$5k/yr
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2. [Decanal Level for support and Director level for action] Incentivize and facilitate engagement of faculty.

2a) New curriculum committee. *“Establish an undergraduate program committee (with a curricular mandate distinct from the charge for the advisory council).”*

Given that currently the program director is largely responsible for the curriculum that requires a large commitment of time, support in the curriculum area would be beneficial. The form that such support takes could be with co-directors/coordinators and the Advisory Council. A new committee with a distinct mandate could play a role if supported with the assistance provided by additional FTE administering the program (with co-directors/coordinators). However, the role, size, and composition of the existing Advisory Council could also be reconsidered to fulfill the goal of a small group charged with a distinct curricular mandate.

Proposed response #4: Use Advisory Council as curriculum committee.

Action

- The existing Advisory Council—still relatively new—could have more defined curricular responsibilities and possibly additional members (2-3 maximum) to include faculty from colleges prominent in the ESUP curriculum but currently not represented (Science, Forestry, Liberal Arts). Cost: No additional costs beyond the proposed FTE for a co-director and the time for advisory council members.
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2b) Program leadership succession. *“Ensure that succession planning or cross-training occurs for eventual changes in leadership.”*

This could be addressed with 1a by the addition of FTE in the form of co-directors or coordinators responsible for program administration.

Proposed response #5: Use new Associate Director position as training for future ESUP Director.

Action

- Add FTE for co-director as proposed above. Cost: No additional costs beyond the proposed FTE for a co-director, and time of director to train co-director.
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2c) Offer GTAs to courses in exchange for meeting ES needs. *“Incentivize faculty to consider ES needs in their course syllabi by providing teaching assistants to large courses of high value to the ES program.”*

This recommendation has cross-college course curriculum and budget implications. It is beyond the program director’s current role and currently not seen as a high priority. However, if the graduate program in Environmental Sciences comes under CEOAS administration, it could become more significant (see 3a).

Proposed response #6: Explore potential for graduate ES Program to move to CEOAS.

Action

- Continue to explore the potential for the graduate program in Environmental Sciences coming under CEOAS administration. In such a scenario, the capacity for CEOAS to incentivize faculty to consider ES needs across OSU colleges could be increased by the provision of GTAs from a graduate ES program. Cost: Currently, CEOAS has no ES graduate program. Without an ES graduate program, an incentive strategy through provision of GTAs would not be a priority.
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2d) Student-faculty mixers. *“Fund quarterly faculty collaboration events that include social activities for relationship and program development. Include opportunities for ES students to better know the faculty in other colleges (for the purposes of student success, career planning, etc).”*

This is a good idea and has been tried in the past. With additional FTE for an Associate Director, such events could be renewed and enhanced. One or two annual “mixers” of students and ESUP faculty could be organized, especially with the assistance of the Experiential Learning Coordinator (Erin Lieuallen). A modest budget from discretionary funds for food would be necessary.

Proposed response #7: Develop 1-2 annual events that bring together ESUP students and faculty.

Action

- The new Associate Director together with the Experiential Learning Coordinator would have primary responsibility to assure the planning and execution of the events. Cost: No additional cost beyond the proposed new co-director and time of the existing Experiential Learning Coordinator, or maximum \$300 annually for snacks.
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2e) Faculty to teach ESUP curriculum thread. *“The capstone course model should be embraced but also include a threaded course that acts as the breadcrumbs between the orientation course and the capstone, in which students experience implied cohort development in a mid-program course that helps them draw program objectives together regardless of their specializations. These should be required courses for all students and include career preparation and awareness in the senior year.”*

This could be addressed with 1b.

Action--See 1b above. No additional cost beyond 1b.

2f) Specialization fields. *“Reassess the value of specializations and whether there should be many or few. Arguments could be made for either approach. Ideas that were addressed by stakeholders were environmental chemistry, humanist/social justice, marine sciences, and law. These could serve both existing students and attract a more diverse population of students.”*

This recommendation refers to ongoing discussions in the ESUP involving the director, advisors, and Advisory Council. The program strives to be alert to changes. Environmental chemistry has been approved since the program review and is now in the OSU catalog as “Chemistry and the Environment.” Reviewers also noted humanist/social justice as a potential specialization. Environmental Justice is indeed an area to consider for development with potential contributions from courses in the College of Liberal Arts in anthropology, ethnic studies, political science, and sociology, as well as the existing CEOAS course GEO 309 Environmental Justice. Marine science offers potential for a specialization area in Environmental Sciences, but since the development of the Ocean Science option in the Earth Sciences major (and likely to become a separate Bachelor of Science degree program), it would be largely redundant. OSU’s public policy program has plans for changes that may be relevant to ESUP. Currently, this topic does not require significant, immediate changes and is thus not a high priority item for additional, new changes.

Proposed response #8: Monitor ESUP specializations and consider modifications as needed.

Action

- Continue to monitor the program’s specializations, environmental science field in general, student interests, and the OSU faculty areas of environmental science expertise for potential modifications to the specialization fields. Cost: No additional cost since this is an ongoing activity of the director and advisory council. However, development of new specializations, especially in the form of transcript-visible options, minors, or specializations would require considerable time on the part of the co-directors.

3. [Decanal and Director Levels]. Provide support for student success.

“Numerous existing structures and practices limit the eventual success of students. Examples could include, but should not be considered directives:”

3a) Undergraduate & graduate ES program coordination in CEOAS. *“Explore coordinating ES Undergraduate Program with ES Graduate Program with possible move of graduate program to College, with benefits to both the undergraduate and graduate programs such as teaching opportunities for graduate students, mentorship opportunities for undergraduate students, and better conversations related to environmental science careers for both UG and GRAD.”*

We understand that CEOAS has made a request to the Graduate School to explore housing the graduate program in Environmental Sciences. What are the Graduate School’s concerns? Such an alignment seems to make sense and would provide good name recognition for both programs under the umbrella of CEOAS. There are possibilities for GTA planning that could involve more in the undergraduate program. Does Robert Allan (CEOAS Director of Graduate Student Services and Development) have ideas that could help with thinking about this?

Potential synergies from a unified graduate and undergraduate program coordination include: visibility of the programs at a university already known for its depth and breadth in the environmental sciences generally; clear pathways for undergraduates in ESUP to research and

careers in the field; GTAs in the graduate program who could support the proposed ENSC 221 Environmental Sciences Field & Laboratory course, plus other CEOAS courses and courses in other colleges with significant ESUP enrollment thus creating an offer to other colleges to positively contribute to the inter-college dependent program; and providing a rational administrative integration of programs in the same field at the same university.

In addition, if ESUP undergraduate teaching FTE expands this could generate revenues that could support GTAs, creating ways to support ESUP graduate students. Also, CEOAS faculty could recruit excellent students to an Environmental Sciences graduate program, students who might not apply to OEAS, Geology, or Geography.

Proposed response #9: Explore possible coordination of ENSC undergraduate and graduate programs at OSU.

Action

- Explore the coordination of ENSC undergraduate and graduate programs in CEOAS. See 2c above. Cost: The budget implications could require a close analysis since there would be potential new costs and revenues.

3b) Collaboration with allied programs. *“Review opportunities for synergies and efficiencies through collaboration with other interdisciplinary undergraduate programs including ES, Marine Sciences [sic], Natural Resources, Sustainability Studies (2 programs). It was clear that the ES and NR programs had some duplicative efforts but there is clearly a need for both programs and it is important to differentiate them, help students understand those differences, and then advise collaboratively to promote student success in whichever program they land.”*

We regularly monitor this topic. It’s not new and thus it’s not a particularly high priority for additional changes. We already advise collaboratively with Natural Resources and Fisheries and Wildlife, plus maintain close contact with Sustainability and the budding Marine Studies Initiative. A degree comparison sheet is the product of the collaboration and it helps students and advisors distinguish the programs. Of course, we also don’t control other programs.

Proposed response #10: Evaluate opportunities to collaborate with other allied undergraduate programs at OSU.

Action

- Continue review of opportunities to collaborate and streamline work with other, allied programs. Cost: No additional cost.

3c) Collaboration with other departments. *“Review opportunities for synergies and efficiencies through collaboration with departments that teach key courses in each ES Specialty. This opportunity is ripe for success especially if ES graduate students who have interests in these specialties can be leveraged to maximize those synergies.”*

Collaboration with other departments is important, but we have constrained opportunities in the OSU administrative structure for interdisciplinary programs. The idea of

graduate students as mentors offers potential in theory. It's not clear how to apply this in a way that would benefit undergraduates. If the graduate program in Environmental Sciences comes under CEOAS, such synergies could be explored (as indicated above in 3a).

Proposed response #11: Evaluate opportunities to collaboration with departments participating in ESUP.

Action

- Continue to review opportunities to collaborate with the various departments that teach key courses in ES. See 2c and 3a for the possibility of bringing the graduate ES program under CEOAS with potential for new developments. Cost: No additional cost
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3d) Specializations, subjects required, and sequencing of courses. *“Review ES Specialities on a regular basis, with attention to campus opportunities and relevant topics paying close attention to market research and graduate programs that are growing. This should include the consideration of the importance of GIS in ES programs and whether it needs to be a program requirement or only optional coursework. Additionally, the Marine Studies initiative at OSU can only be improved with the inclusion of the ES program participation. This review should also include the sequencing of courses so that ES students are not ill-prepared for the rigorous courses they choose to take in their specializations (i.e., physics sequence might be necessary for full success in certain specializations).”*

These comments contain a number of topics. Advising students for course sequences is already a major part of the advising process and priorities. Prerequisites are currently addressed in advising. Specializations are reviewed regularly, including course availability and subject relevance. We do not have the means to conduct market research. The role of GIS and economics in the ESUP is an ongoing discussion among the Advisory Council members, the academic advisors, and the director. Balancing the total number of credits in the major with requirements, plus the degree of knowledge required for all graduates in fields such as GIS and economics is part of the challenge. The ESUP director currently participates in curriculum planning for the Marine Studies Initiative and the proposed new Marine Studies Bachelor's degree.

Action

- Continue to review specialization, subjects required and course sequences. The co-directors would work closely with the academic advisors. Cost: No additional cost.
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3e) Collaborative learning spaces. *“Provide welcoming space for ES student study, collaboration, and community building. This was a constant concern brought up during the program review stakeholder discussions. Consideration for creating a physical environment for on campus students to study, community build, collaborate, and perform critical lab projects appears woefully necessary if a disparate program wants to draw a thread between their student population.”*

Collaborative learning spaces are indeed very important. This topic is discussed at the college level and should include Environmental Sciences.

Proposed response #12: Develop collaborative learning spaces for ENSC students.

Action

- ESUP co-directors work with other CEOAS administrators to develop welcoming collaborative learning spaces both in short-term time spans and longer-term. Cost: No additional cost directly for ES except the time of directors to contribute to planning. If necessary, the cost of constructing or remodeling space would likely be at the college and/or university levels.

3f) Better serve students of color. *“Overlay an equity lens into the decisions made related to student success and this program. There is a desired interest to better serve students of color and growing those populations in the program will require assessment of how those students are currently attracted to the program and served.”*

This is another college-wide topic. The recommendation reinforces guidance to CEOAS provided by Jane Waite, OSU’s Senior Associate for Social Justice Learning & Engagement, and other speakers in the successful Unpacking Diversity seminar series in the college. This is an ESUP priority but can only be effective with commitment at the university and college levels.

According to figures from the office of Social Justice Learning & Engagement, CEOAS has had more involvement in the Social Justice Initiative than any unit at Oregon State. In CEOAS, 237 faculty, staff, and graduate students have completed 4 hours of training in the two Tier One workshops, compared with 144 in Student Affairs and 135 in Finance and Administration (the next highest college participation is Agricultural Sciences with 88). The college has invested in addressing diversity and that creates an opportunity for the ESUP. With welcoming and trained faculty, staff, and graduate students, CEOAS is well positioned to recruit and provide an academic environment to retain students from underrepresented backgrounds.

Together with the recently hired CEOAS outreach coordinator (Ryan Brown), ESUP wants to actively contribute to enhancing opportunities for demographic groups underrepresented in the environmental sciences, especially to promote ESUP in Oregon high schools with high enrollment of students of color to begin a systematic approach to addressing underrepresentation in the program. Approaches would include:

- i) close collaboration with other OSU units, in particular the Office of Institutional Diversity with staff from Diversity and Cultural Engagement and the Cultural Resource Centers, to learn from the knowledge and experience of university resources and to align with existing university efforts;
- ii) development of culturally responsive environmental science-based theme partner programs in pre-collegiate schools that have significant populations of underrepresented demographic groups;
- iii) engagement of OSU environmental science faculty members with civic organizations and schools in communities not well represented in ESUP to learn, build community, and support local environmental concerns;

- iv) site visits to pre-collegiate schools and programs for young people in underrepresented communities by OSU environmental sciences faculty and students, especially those doing active research and from underrepresented communities themselves, and visits to OSU for prospective students from those communities; and
- v) scholarships specifically designed to uplift and serve students from underrepresented communities.

Combined with the next and last item (3g Alumni Relations), we would like to see CEOAS make a commitment to fund Environmental Sciences scholarships for 5 years as seed money to support minority applicants, while the ESUP co-directors work with the OSU Foundation to develop an endowment for scholarships. ESUP needs support for student scholarship funds. Prior to 2012, ESUP was housed in the College of Science where the college supported scholarships for ESUP students. When ESUP moved to the new CEOAS, the college (CEOAS) sought to avoid a break in the scholarship support for the program and continued to fund scholarships in two categories: Excellence and Engagement. The rationale was to provide incentives and recognition to students in the largest undergraduate program in the college. At about the same time the first scholarship targeting ESUP students in CEOAS was established with the Ann Elizabeth Sellers Scholarship, and since then one other scholarship (Gakstatter—in freshwater quality and freshwater ecosystems) has been established. For 5 years ending after 2017, CEOAS allocated \$6,000-7,000 annually for the Excellence and Engagement Scholarships in ESUP. However, these scholarships did not address the underrepresentation of Latino, African American, and Indigenous students in ESUP.

We propose that scholarship money should prioritize recruiting underrepresented demographic groups. With its successful support of addressing diversity through the “Unpacking Diversity” seminar series CEOAS is particularly well prepared to recruit and retain students from underrepresented groups in its academic programs. ESUP would like to provide scholarship funds to support two 4-year “Environmental Justice” scholarships at \$3,000/year (\$1000/quarter) each. The initial cost could be met by reinvesting 4% of the estimated \$612,000 net revenue generated by the program by academic year 2024-25. Year 1 (2021-22) \$6,000, Year 2 (2022-23) \$12,000 (2023-24), Year 3 \$18,000, Year 4 (2024-25) \$24,000. This would be seed money to initiate the scholarships while the ESUP director works with the OSU Foundation to develop an endowed fund. With this investment, ESUP could provide a tangible offer to applicants considering a variety of schools.

We do not want to drop the Excellence and Engagement scholarships. However, if a choice needs to be made with scarce resources, the emphasis should be on scholarships to address underrepresentation. Excellence and Engagement can be recognized in less costly ways, as the Geology, Ocean Science, and Geography programs have shown with annual award presentations of a certificate and books or tools related to the field of study. Environmental Sciences could do the same with modest funding for a book by Vandana Shiva, Wangari Maathai, or John Muir, a Bonnie Hall botanical print of Oregon native plants, an Ansel Adams photo, or other appropriate item.

Proposed response #13: Improve recruitment and retention of students from underrepresented groups.

Action

- Implement the approaches suggested above in consultation with other CEOAS administrators and relevant OSU offices, especially the Office of Institutional Diversity. Cost: Ideally, provide 5 years of seed money support phasing in two 4-year scholarships at \$3,000 each annually. The cost would thus be \$6,000 in the first year, growing to \$24,000 in the fourth and fifth years. However, depending on the scope and commitment to the project of addressing underrepresented demographic groups more scholarship money could be invested as well as a budget for coordinating middle and high school programs in environmental science linked to CEOAS.
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3g) Alumni relations. *“Coordinate with campus development and alumni centers to track students in their careers and eventual development capacity.”*

Maintaining contact with alumni is a work in-progress. The ESUP enthusiastically will contribute to this in collaboration with college-level efforts and university-level activity (the OSU Foundation).

Proposed response #13: Develop an alumni database.

Action

- Develop an alumni database in coordination with the OSU Foundation. Cost: If this is currently underway with existing personnel (Desirae Wrathall), then there would be no additional cost. Depending on new time commitments, the cost could include more time allocation from the program co-directors and the CEOAS alumni relations staff.

Signature Sheet for Action Plan

In signing this document, I (as Program Director) indicate that all faculty members in the academic program under review have had an opportunity to participate in the development of this Action Plan and review the final document. Additionally, the signature of the Dean indicates that the Dean has reviewed the final Action Plan document and discussed it with the Director for this program.



24 February 2020

Laurence Becker, Director

Date

DocuSigned by:

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2/26/2020 | 17:07:32 PST

Roberta Marinelli, Dean

Date