

July 2008

## **Bachelor of Science in Environmental Studies, Central Washington University**

### **Introduction**

Central Washington University seeks approval to establish a Bachelor of Science in Environmental Studies degree program. Housed within the College of the Sciences, this interdisciplinary program would complement an existing Environmental Studies minor. Whereas the minor is intended to promote environmental literacy among a broad range of students, the major would be intended to provide students with the necessary skills for graduate study or entry into environmental careers. The proposed program would enroll 7 FTE students at Ellensburg beginning in fall 2008 and 30 FTE at full enrollment by 2012, graduating 15 students per year.

### **Relationship to Institutional Role and Mission and the Strategic Master Plan for Higher Education**

By equipping students with an understanding of both natural and social science aspects of environmental issues, the proposed program would support CWU's mission to prepare students for responsible citizenship, responsible stewardship of the earth, and enlightened and productive lives. In addition, it would support the *2008 Strategic Master Plan for Higher Education* vision for 2018 by expanding opportunities for students to complete postsecondary degrees in a relevant field.<sup>1</sup>

### **Diversity**

In addition to university-wide diversity initiatives, departmental diversity efforts would include:

- Developing marketing materials in consultation with the program's diversity committee and faculty and students from under-represented groups;

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<sup>1</sup> Page 10 of the *2008 Strategic Master Plan for Higher Education*, entitled "A vision for 2018," states: "Washington's engaged citizens will create a civic culture that sustains a strong sense of responsibility to the next generation. This will be expressed in concerted action to address global climate change, protect our natural heritage . . . ." The proposed program would help develop such citizens.

- Identifying recruiting target pools, such as students from the Yakima WATERS<sup>2</sup> project;
- Dovetailing program recruiting efforts with CWU's STEP<sup>3</sup> program to identify and recruit Hispanic students who are interested in environmental careers;
- Working with CWU's Development Office to develop an undergraduate scholarship program for Hispanic or Native American students similar to the Native American Graduate Fellowship Program in Resource Management;
- Faculty presentations at Yakima Valley Community College and possibly Wenatchee Valley College;
- Coordination with Central Washington University's admissions office to present marketing materials at meetings of under-represented groups and include the proposed program in advertisements in regional minority news media (e.g., La Voz Hispanic);
- Advertising faculty positions with minority professional organizations (e.g., American Indian Science and Engineering Society);
- Creating a supportive environment through faculty-student and student-student mentoring relationships to increase retention of under-represented students;
- Discussing retention strategies with under-represented student groups such as MEChA (Movimiento Estudiantil Chicano de Aztlan); and
- Annual evaluation of recruitment and diversity efforts.

## Program Need

According to the Higher Education Coordinating Board's *State and Regional Needs Assessment Report*, a large percentage of students stay within their home region to attend college. Although several other institutions currently offer baccalaureate degrees in environmental science or environmental studies, none are located in the Tri-County region. Thus, the proposed program would respond to student needs by providing access to an environmental baccalaureate degree for students in the region. Student interest in environmental programs is indicated by enrollment in CWU's existing Environmental Studies minor, which enrolled 22 students in 2008. Altogether, minor and general education courses generated an average of 27 FTE students per year during academic years 1998-2008.

In addition, program planners surveyed students in general education courses covering environmental topics (e.g., earth as an ecosystem, human ecology, environmental ethics) in fall 2007 and winter 2008 and found that 24 out of 186 students indicated they might be interested in an environmental studies major if it were offered. A similar survey in an introductory science course at Yakima Valley Community College identified 4 out of 40 students as possibly interested in the proposed major.

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<sup>2</sup> A project in which CWU graduate students bring environmental science research into K-12 science classes, including those in Yakima School District, which has a high population of Hispanic students.

<sup>3</sup> A program to recruit Hispanic students interested in majoring in science.

Program planners also cite 12 student inquiries about majoring in environmental studies or environmental science during academic year 2007-08. Of these students, six indicated that they would definitely enroll in the major if it is offered in fall 2008, and they have begun planning their class schedules accordingly.

According to the HECB's *State and Regional Needs Assessment Report*, government, agribusiness, and health care are the key middle- and long-preparation occupational growth areas for the Tri-County region. The proposed program could help fill government need for environmental scientists, specialists, and policy-makers in government agencies such as the Departments of Natural Resources, Ecology, and Fish and Wildlife. As additional evidence for employer demand, program planners cited the 2008-09 edition of the U.S. Department of Labor's *Occupational Outlook Handbook*, which states that "Employment of environmental scientists is expected to increase by 25 percent between 2006 and 2016, much faster than average for all occupations."

CWU serves a region facing a wide variety of environmental issues including climate change; the diminishing Cascade snowpack and its water use implications; dams and anadromous fish migration and habitat; alternative energy sources such as solar power, wind power, and biofuels; impacts of different land use including agriculture and forestry; etc. The community would benefit from the environmental expertise of the proposed program's graduates who could help fill the 25,000 green collar jobs the Legislature has set a goal of creating by 2020.<sup>4</sup>

## Program Description

The proposed program would feature an interdisciplinary course of study designed to provide students with an understanding of the natural science of environmental issues as well as the social, political, and economic factors that contribute to policy and planning decisions. The program would consist of courses in the following disciplines: 50 percent natural science, 40 percent social science (including economics), and 10 percent political science. Located in Ellensburg, the program would serve both part- and full-time students from a variety of backgrounds. Its goal would be to prepare students for graduate study in environmental fields or for entry into successful environmental careers.

To be eligible for admission, students must have satisfied CWU's computer literacy, English composition, and mathematics competency requirements (21-25 credits) and completed 40 credits of core requirements with a minimum grade point average of 3.0; or have completed a direct-transfer associate degree from a recognized community college.

Once admitted, students would take a curriculum consisting of three parts: 25 credits of foundational requirements in natural and social sciences; 37-42 credits of core Environmental Studies required and elective courses; and 29-35 credits of courses that constitute an area of specialization.<sup>5</sup>

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<sup>4</sup> The goal is part of House Bill 2185, which was signed into law in 2008.

<sup>5</sup> The initial set of specializations would be: Environmental Biology; Environmental Chemistry; Environmental Geology; Physical Geography; and Water and Air Quality.

Most of the required core courses would be team-taught or team-designed interdisciplinary courses, with an emphasis on presentation of both natural science and social science perspectives. The goal of this emphasis would be to train students who can converse with, understand the perspective of, and communicate effectively with a broad group of constituencies (e.g., scientific researchers, resource managers, community members, policy-makers, etc.) regarding environmental issues and decisions. Two elective courses would allow students to explore the breadth of the environmental studies/sciences discipline, both within the sciences and the humanities.

The proposed program would include lab and fieldwork components as well as a capstone course in environmental policy formulation. In addition to classroom core requirements, students would complete one out-of-classroom learning experience that could be an independent research project, an internship, a service-learning project, or study abroad. Finally, students would complete six to eight courses (29-35 credits) in one of five areas of specialization. This requirement would provide students with a depth of knowledge in one sub-discipline of environmental studies so that they have an area of expertise that they can rely on as they enter the workforce.

The proposed program would be taught primarily by full-time, tenure-track faculty, including a newly hired director to be shared between the proposed program and CWU's Center for the Environment. Students would normally complete the program in two years and would achieve the following learning outcomes:

- Students possess fundamental understanding of current environmental issues;
- Students can describe the various perspectives that different constituencies bring to environmental issues;
- Students make informed decisions (e.g., voting and other life choices) that take into account relevant environmental issues;
- Students will develop critical thinking skills necessary to carry out scientific research and assess and develop policy choices;
- Students are conversant in techniques and vocabularies of diverse environmental disciplines and can integrate knowledge from different perspectives;
- Students possess good oral and written communication skills; and
- Students have depth of knowledge in an area of specialization.

To measure how well students have mastered the learning outcomes, the student assessment plan would include examination of overall student performance based on class grades as well as assessment of assignments, examination questions, and projects from courses in the core sequence. In addition, a proficiency test and student survey would be administered during the capstone course.

To supplement CWU's regular five-year program review cycle, an annual review of program outcomes would be made by an assessment committee of program faculty. Focus groups and informal gatherings would be used to assess the level of student satisfaction with the program and their perception of what skills they have obtained and areas where they would like more training. Entry surveys would be used to assess basic knowledge and skills of students entering the program as well as to understand their math and science background. Exit surveys would be used to get feedback from the students on their perceptions of the program, to find out what order they are typically taking their core courses in, and what electives are most frequently used. The

assessment committee would review syllabi and assignments for these courses in order to understand the sequences of courses the students have taken and to ensure that student outcomes are addressed at multiple levels. Finally, employers of program graduates would also be surveyed or interviewed to identify strengths and weaknesses of graduates.

## Program Costs

The proposed program would enroll 7 FTE students in the first year, growing to full enrollment of 30 FTE students by the seventh year. To implement the program, its planners have budgeted 0.6 FTE for administrative staff and 2.1 FTE for faculty. The proposed program would use existing office space, laboratory, and library resources, so the budget excludes those items. It would be funded by internal reallocation, part of which would be a “Spheres of Distinction” internal reallocation.

At full enrollment of 30 FTE, the total cost of instruction would be \$172,000, or \$5,733 per FTE. This falls between the ranges for students majoring in sciences and social sciences at comprehensive institutions. According to the HECB’s *2005-06 Education Cost Study* (July 2007), the direct cost of instruction per average annual sciences undergraduate student FTE at comprehensive institutions ranged from \$6,226 at Eastern Washington University to \$7,447 at Central Washington University. However, the corresponding range for social sciences was \$3,561 at Eastern Washington University to \$4,839 at Western Washington University. The result that the proposed cost per FTE falls in between the ranges for sciences and social sciences is consistent with the proposed program’s combination of natural and social sciences approaches.

## External Review

Two external reviewers who met formal HECB qualifications reviewed the program: Dr. Robert Carson, Co-Director of Environmental Studies, Phillips Professor of Geology, Whitman College; and Dr. Linda Weavers, Associate Professor and John C. Geupal Chair, Civil and Environmental Engineering and Geodetic Science, and Co-Director, Water Resources Center, Ohio State University. A third reviewer, Ms. Heidi Andersen, an environmental planner in Breckenridge, Colorado, provided the perspective of a potential employer of the proposed program’s graduates.

All three reviewers supported the proposal. Drs. Carson and Weavers called it excellent overall, and Ms. Andersen attested to the value of such a curriculum. In addition, each reviewer offered five or six recommendations about details, such as whether to include particular courses. Program planners responded positively with regard to most of the recommendations and offered acceptable rationales for not following other recommendations. For example, Dr. Weavers recommended requiring calculus for the Environmental Chemistry specialization, and program planners declined because to do so would increase credits in the major and necessitate removing a chemistry course from the specialization. Program planners did take note of the recommendation, however, and committed to monitor students’ math skills.

## Staff Analysis

CWU's mission has a strong environmental component, which the proposed program would support by equipping students with an understanding of natural and social science aspects of environmental issues. The importance of environmental study to CWU is indicated by the fact that the proposed program would be funded in part by "Sphere of Distinction" funding. In addition, the proposed program would support the *2008 Strategic Master Plan for Higher Education* vision for 2018 by expanding opportunities for students to complete postsecondary degrees in a relevant field. Furthermore, the proposed program features a strong diversity plan.

Formal and informal measures indicate sufficient student demand for the proposed program and students living in the Tri-County area would benefit from the creation of the only baccalaureate environmental studies or environmental science degree close to their homes. In addition, U.S. Department of Labor data indicate growing employer demand for environmental scientists. Because the proposed program would be offered in a region facing a wide variety of environmental issues such as the water use implications of the diminishing Cascade snowpack, the community would benefit from the program's focus on environmental issues and from the environmental expertise of its graduates.

Students could enter the program from a variety of backgrounds and the proposed program would feature a well conceived articulation plan. Since environmental decisions require data from a variety of fields, students would benefit from the proposed program's strong interdisciplinary approach. Students would be taught primarily by full-time, tenure track faculty and would benefit from their disciplinary expertise. Students would be assessed in several ways, including a proficiency test and final report in a capstone course. Similarly, program assessment would occur in a variety of ways, including focus groups, surveys, and assessment committee review of courses.

The proposed program would not unnecessarily duplicate existing programs in Washington, because its curriculum emphasis differs from that of existing programs, and because it would offer the only baccalaureate environmental science or environmental studies degree in the Tri-County region. Finally, the proposed program would be offered at a reasonable cost.

## Staff Recommendation

After careful review of the proposal and supporting materials, staff recommends approval of the Bachelor of Science Environmental Studies degree at Central Washington University. The HECB education committee discussed the proposal during its June 23, 2008 meeting and recommended approval by the full board.

**RESOLUTION NO. 08-22**

WHEREAS, Central Washington University proposes to offer a Bachelor of Science in Environmental Studies degree; and

WHEREAS, The program would support the institution's mission by equipping students with an understanding of natural and social science aspects of environmental issues; and

WHEREAS, The program would support the *2008 Strategic Master Plan for Higher Education* vision for 2018 by expanding opportunities for students to complete postsecondary degrees in a relevant field; and

WHEREAS, Students would benefit from the program's strong interdisciplinary approach; and

WHEREAS, Student learning outcomes are clearly identified and would be assessed throughout the program; and

WHEREAS, The program would not unnecessarily duplicate existing programs in Washington; and

WHEREAS, The program would be offered at a reasonable cost;

THEREFORE, BE IT RESOLVED, That the Higher Education Coordinating Board approves the Bachelor of Science in Environmental Studies degree at Central Washington University, effective July 21, 2008.

Adopted:

July 21, 2008

Attest:

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Bill Grinstein, Chair

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Roberta Greene, Secretary