Academic Program Approval, Academic Strategies Committee

PSU, B.A./B.S. in Earth Science

1. Describe the purpose and relationship of the proposed program to the institution’s mission and strategic plan.

The B.A./B.S. in Earth Science provides a program of study with a core of geology courses (52-53 credits), courses in allied sciences (chemistry and biology or physics (30 credits), mathematics and statistics (8-12 credits minimum), and 8 credits of upper division courses in sustainability-related topics. Up to 8 credits of upper division science, mathematics, or engineering courses may be substituted for upper division geology courses. The course of study is individually tailored to meet student interests in the Earth Sciences by providing options for integrated studies in geology with life science or physical science emphasis. The proposed course of study also provides a degree program that parallels the Integrated Science program for students preparing for careers in secondary teaching in public schools. The inquiry approach used in the geology field and laboratory courses that are the core of the program model the inquiry approach appropriate for use in secondary classrooms.

“The mission of Portland State University is to enhance the intellectual, social, cultural and economic qualities of urban life by providing access throughout the life span to a quality liberal education for undergraduates and an appropriate array of professional and graduate programs especially relevant to metropolitan areas (www.pdx.edu).” The strategic plan seeks to implement this mission. Increasing the quality and number of highly qualified science and mathematics teachers in Oregon public schools, both in the metropolitan area and throughout the state, is an important piece of the strategic plan to enhance all aspects of Science, Technology Engineering, and Mathematics (STEM) education at Portland State University (PSU). The Graduate School of Education provides a course of study leading to licensure of teachers, but the content preparation lies within the academic departments, mostly within the College of Liberal Arts and Sciences. The integrated science program is advised through the Department of Geology and the B.A./B.S. in Earth Science is an effective degree option for students building content knowledge for this endorsement.

2. What evidence of need does the institution have for the program?

The proposed degree program is the outgrowth of academic advising for students in the geology and general studies-science degree programs and students (undergraduate and post-baccalaureate students) preparing for admission to the Graduate Teacher Education Program (GTEP) at PSU and other teacher education programs through the integrated science program. The need for the B.A./B.S. in Earth Science has been identified through this experience. The demand for highly qualified science teachers in Oregon public schools is well known. Numerous districts in eastern Oregon entice retired science teachers to return to the classroom for short terms of service because an adequate number of science
teachers are not available to meet demand. In the metropolitan area, population growth in communities surrounding Portland drives the need for highly qualified science teachers. Workforce and school structural factors have contributed to an under supply of highly qualified science teachers in upper elementary (4th and 5th) and middle school grades. Increasing the supply of student prepared for the integrated science program would help address these needs.

3. Are there similar programs in the state? If so, how does the proposed program supplement, complement, or collaborate with those programs?

Bits and pieces, a course here and there, exist at University of Portland (Dr. Robert Butler) and at Lewis and Clark (Dr. Kip Ault) and can be used by students to compliment their course of study. Access, particularly for teachers, through Oregon PrISM (Preparation for Instruction of Science and Math) to courses offered by PSU, University of Portland, Lewis and Clark, George Fox, Oregon State University, Western Oregon University, and Eastern Oregon University can be used to build collaboration among institutions and increase learning opportunities applied to the elective parts of this B.A./B.S. in Earth Science curriculum. In some cases, unique programs offered by other institutions provide courses that meet expectations of this degree. An example is the long-established program of research through the University of Idaho on the Juneau Ice Fields of Alaska. The courses offered through this program have traditionally been allowed to meet elective requirements in the Geology curriculum at PSU. The University anticipates this to continue in the Earth Science degree program.

4. What new resources will be needed initially and on a recurring basis to implement the program? How will the institution provide these resources? What efficiencies or revenue enhancements are achieved with this program, including consolidation or elimination of programs over time, if any?

The proposed program has little direct financial impact because it formalizes existing practices at PSU. Students preparing for careers in upper elementary and secondary teaching through the Integrated Science Program are already taking classes and moving through degree programs. The proposed program formalizes this pattern within the framework of an academic department (geology) and a coherent degree program (earth science). Anticipated growth in the program will require additional resources, but currently, space exists in courses in the geology portion of the curriculum. If additional laboratory sections are needed to accommodate enrollment increases, this will have an impact on requirements for additional graduate teaching assistants but can be accommodated by available room space. The long-term financial viability of the program is linked to generation of resources through student fees for laboratory courses and field trips (the only resource directly controlled by the Department), external funding through education and outreach supplements to research grants, and increments in services and supplies budgets negotiated with the Dean on an annual basis.
All appropriate University committees and the OUS Provosts’ Council have positively reviewed the proposed program.

**Recommendation to the Committee:**
The OUS Provosts’ Council recommends that the Board’s Academic Strategies Committee authorize Portland State University to establish an instructional program leading to a B.A./B.S. in Earth Science, effective Winter 2010. Pending Committee approval, a five-year follow-up review of this program will be conducted in 2014-15.

(Committee action required.)