B.S. SECONDARY EDUCATION, MAJOR IN EARTH SCIENCE

SUBMITTED BY

THE UNIVERSITY OF MONTANA-WESTERN

Objectives and Needs

1. *Centrality to or enhancement of the institution's approved mission and institutional objectives to be achieved by the addition of this program.*

   a. We propose to elevate an existing teaching minor in Earth Science to the level of a major. This would be within The University of Montana-Western's existing Bachelor of Science in Secondary Education degree. The objective of this proposal is to meet the demand for Earth Science teachers in the state and beyond. Earth Science is taught at most high schools and middle schools across the state and the requirements of the No Child Left Behind Act have increased the need for teachers with specific content area certification in Montana and beyond. At present, few teachers of Earth Science in the public schools in Montana have this certification, so the addition of this certification at UMW will help to meet this demand.

   b. Western's historical mission has been centered on the education of future educators, especially future public school teachers for Montana. This proposal is consistent with this mission since these students are preparing for careers as public school teachers. The university's mission statement strongly supports "education through experiential learning that combines theory and practice." Western's unique setting in one of the best natural laboratories in the country, in combination with our unique Experience One scheduling model allows us to offer a significant portion of this program through field-and-project-based curricula designed to provide students with real-world experiences that cannot be duplicated in classroom-based curricula. No other campus in the system offers such a field-intensive preparation for earth science teachers, making this proposal unique among existing programs.

   c. Most of the content courses will be taught in a field-based setting, making the exposure to the Earth Sciences real and less abstract. No additional telecommunications methods are proposed at this time.

   d. This proposal utilizes existing courses that are utilized for other Earth Science-centered degrees on campus (i.e., Environmental Science, Environmental Interpretation and the Earth Science teaching minor). The proposed course of study is shown below: *[Note: all courses included in the proposed major are currently being taught at UMW. No new courses are proposed at this time.]*

New or Revised Catalog Description

GENERAL EDUCATION		**32 credits**
Including for science general education:		
Chem 131	General Chemistry	(4)
Take 1 from these 2:		(4)
GEOL 101	Intro to Geology	
GEOL 150	Environmental Geology	

CLASSES FOR THE MAJOR (Total of 48 credits)

CHEM 132	General Chemistry	4
GEOL 226	Rocks, Minerals and Resources	4
GEOL 230	Geology of the American West	4
GEOL 330	Structure and Tectonics	4
GEOL 378	Surficial Processes	4
GEOL 409	Geology Seminar	4
GEOL 432	Depositional Environments (Oceanography)	4
ENVS 201	History & Philosophy of Science	4
ENVS 348	Soil Science	4
MATH 232	Statistics	4
PHYS 239	Physical Meteorology	4
PHYS 240	Astronomy	4
Major Credits		48
Professional Education Core Credits		26
Elective Credits		10
Student Teaching Credits		12
TOTAL		**128**

2. Need for the program.

a. An informal survey of science education and Environmental Science students indicates that approximately 25% (of approximately100 students) expressed an interest in the availability of a Secondary Education Earth Science major at UMW. The existing minor has been well subscribed in the past, but with the changes associated with the No Child Left Behind Act, fewer students are interested in minor certification, and prefer content-area major certification.

b. Out of state public school growth has increased the demand for Earth Science teachers, especially in states like California, Nevada and Utah. However, the demands of the No Child Left Behind Act will most likely require them to have a content major, so UMW needs to elevate the Earth Science minor to the level of a major.

c. This degree option is particularly well suited for Montana students (by far the bulk of the UMW student population) because of their interest in the outdoors and the importance of geology in the economy of the state.

d. This expanded offering would further UMW's strong reputation as the historic teacher's school of the state. The Earth Science faculty at UMW are very strong and have built a number of well recognized non-education programs in the Earth and Environmental Sciences. The addition of this teaching major will enhance our recognition for excellence in these areas.

3. New courses the program will add to the curriculum and the course requirements for the degree.

a. No new courses or resources are required for this major. Furthermore, based on the anticipated number of majors the degree will attract, no additional sections of the existing courses will be necessary at this time.

Adequacy, Accreditation and Assessment Issues

1. *Adequacy of present faculty, facilities, equipment and library holdings in support of the program.*

   a. The current faculty, facilities, equipment or specific library holdings should prove adequate to start this program. Since we have been offering this program as a minor for many years, the resources necessary for elevation of the program to the level of a major are well understood and will not require expansion.

2. *Needs for special accreditation.*

   a. The proposal was designed to meet the requirements for secondary education certification in Earth Science through the Montana Office of Public Instruction.

3. *Assessment plan.*

   a. Prior to graduation, students will be assessed based on outcomes-based performance in their academic courses, assessment of their portfolios for entrance into the Teacher Education Program (TEP), and their knowledge of content and pedagogy during their student teaching experiences. Once graduates are in the public schools, additional assessments via surveys of employer satisfaction will be pursued.

Impact on Faculty, Facilities, Costs, Students and Other Departments and Campuses

1. *Additional faculty requirements.*

   a. No additional faculty will be hired at this time. If students numbers grow as anticipated, one new faculty hire may be needed in year three of the program.

2. *Impact on facilities.*

   a. Present library and computer resources are adequate for this program.
   b. No additional telecommunications courses are anticipated.

3. *Costs estimated over a five-year period.*

   a. As this proposal is for an elevation of an existing minor to the level of a major, the costs are anticipated to be small. Additional resources will only be needed if the anticipated student growth occurs in the program.

4. *Impact on enrollment.*

   a. Anticipated student enrollment in this major is projected over the next ten years to approximate 2 to 3% of the total student population of the campus. There will be no special requirements or enrollment limits associated with this major. No critical mass of students enrolled in this major is mandatory for its existence as all classes are currently being taught.

5. *Relationship to other programs on campus.*

   a. This program is strongly tied to the program in Environmental Science since most of the courses are taught by the faculty members in this department.

6. *Relationship to other institutions.*

   a. This program will prepare undergraduate students well for entrance into existing graduate programs at UM-Missoula and MSU-Bozeman in Education.

Process Leading to Submission of Proposal

1. This proposal has evolved over the years. It began as a minor in the Earth Science Option at UMW, but the demands of the No Child Left Behind Act for content-area majors has prompted us to seek elevation of the program to the level of a major. The proposal was constructed in collaboration with the Education Department at UMW, and has passed through the on-campus curricular proposal processes with high marks.