

A SPACE STUDIES CURRICULUM FOR SMALL COLLEGES AND UNIVERSITIES; John O. Annexstad and Robert C. Melchior, College of Social and Natural Sciences, Bemidji State University, Bemidji, MN 56601-2699.

Space Science curricula have generally been the purview of the large and/or research oriented universities with related departmental status. The advent of the NASA Space Grant Consortium Program has opened the field to a number of smaller, less research oriented schools. At Bemidji State University, we have instituted a Space Studies Minor at the undergraduate level which is designed to address the interdisciplinary nature of the space environment. This curriculum is targeted to supplement majors ranging from Geology to Elementary Education.

Bemidji State University is primarily an undergraduate institution located in Minnesota's northern lake region. The school services a large geographical but limited population area and is in the immediate vicinity of three Native American reservations. As part of the Minnesota State University System (separate from the University of Minnesota - a Land Grant University), Bemidji has strong undergraduate programs in Science, Literature, the Arts and Teacher Education.

As part of the initial proposal to form the Minnesota Space Grant Consortium, Bemidji State agreed to establish an interdisciplinary minor program in Space Studies. The minor was presented to the university curriculum committee and formally approved during the first year of the four year consortium NASA grant. Today, the program lists 30 enrolled students including a significant proportion of women and minorities, primarily Native American.

The basic core of the Bemidji Space Studies minor is comprised of three courses taught under the auspices of the Geology Department. These are Planetology I, Planetology II, and Special Problems. Planetology I, Introduction to Space Science, is a 4 quarter hour sophomore level offering that covers the topics earth, atmospheres, meteorites, moon, comets, asteroids, and living in space. The basic reference text is Morrison and Owen⁽¹⁾ along with heavy emphasis on material from other sources (2)(3)(4)(5). Planetology II, Introduction to the Solar System, is the second quarter offering and follows appropriate portions of the basic text⁽¹⁾ more closely. The 4 credit Special Problems course is built around a mini-thesis on a space theme within the student's area of major interest which is acceptable to the faculty of Space Studies.

The course of study beyond the required 12 quarter hours includes 16 quarter hours of electives. The elective portion of the minor was initially based upon courses already in place at Bemidji when the minor was submitted for approval. These include; Introduction to Environmental Science, Aerial Photography, Geographic Information Systems, Geomorphology, Introduction to Oceanography, Advanced Planetology, Public Policy Analysis, General Psychology, Astronomy, Meteorology, Bureaucracy and Society, and Introduction to Public Administration. New elective courses, either in development or currently being presented by faculty in various departments of the University include; Space Studies: Living in Isolated and Confined Environments (Psychology), Space Studies: NASA History (History), Space Law (Political Science), and Life in the Universe (Biology).

The Space Studies minor is broad enough in scope to allow students to design a personalized course of study that fits his or her major field of interest. Geology majors, for example, can focus on Planetary Geology through Advanced Planetology⁽⁶⁾ with exposure to lunar samples and meteorite thin

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sections, and non-science majors can emphasize management skills. Regardless of a student's major field of interest, the minor program provides an insight to the space program for all.

A very significant aspect of the minor program is the option for elementary, middle and secondary school teachers to upgrade or supplement their education with space studies courses. This has the effect of providing additional science education to K-12 students via teacher education. At Bemidji, we work closely with our future teachers and help them design curricula for use in their classrooms.

The current program will remain as a minor for the next few years but will benefit from constant course renewal and upgrading. As a smaller institution, the student population at Bemidji State is such that a major program is at present unjustified. However, as interest grows and as projected educational and employment opportunities become available, we expect to upgrade to a full fledged department. In the interim, we will continue to provide well trained undergraduates as candidates for graduate school and for entry level positions in aerospace related organizations.

REFERENCES.

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