University System of Georgia Comprehensive Program Review
Web-Based Report

A. All Program Reviews

Institution Name: Columbus State University

Date: 06/21/02

Degree/Major Name: BS in Geology

Degree Acronym: BS

CIP Code: 40060100

Degree Level: Bachelors

College/School/Division: College of Science

Department: Department of Chemistry and Geology

Were other closely related programs reviewed as part of this program review? No

Provide the names of these programs so that we may connect these reviews.

NA

Were external reviewers used to evaluate the results of the program's self-study? Yes

If yes, please describe their role.

The role of the review team was to provide an analysis of the self-study and the program. The process included an assessment of the viability, productivity, and quality of input and evaluative elements ranging from program mission to service. At the conclusion of their visit, the review team identified strengths of the program, provided suggestions for improvement, and presented their recommendations.

Year of the Next Scheduled Program Review: 2004

Accreditations Obtained:

Year of initial accreditation or last program re-accreditation review:

NA

Faculty Resources:

The three geology instructors are full-time members of the Columbus State University faculty. All have earned the PhD Degree from major institutions (State University of New York at Stony Brook, Indiana University, and University of North Carolina at Chapel Hill). All hold professorial rank and are members of the Graduate Faculty. Each member is active in research and each seems to teach a rather heavy load. A high percentage of the credit hours generated are dedicated to Area D of the core curriculum. No courses are taught by part-time faculty.

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B. Scheduled Reviews of Programs

The BS in Geology program was triggered rather than scheduled.

C. Triggered Reviews of Programs

Why was the program reviewed early?

Low Enrollment

The number of majors in the BS in Geology was 6 in FY 1999, 5 in FY 2000, and 8 in FY 2001 for an average of 6.33 for the three-year period. This number is below the minimum System guideline of 15 for bachelor's programs.

Few Graduates

The number of graduates in the BS in Geology was 3 in FY 1999, 1 in FY 2000, and 3 in FY 2001 for an average of 2.33 for the three-year period. This number is below the minimum System guideline of 10 for bachelor's programs.

Major Findings and Recommendations

Quality

The Department teaches a broad spectrum of geology courses with a minimum of manpower. These courses include the standard core as well as diverse upper division and

graduate level courses for the benefit of students in geology, education and environmental science programs. All upper level courses emphasize fieldwork. A significant number of students are involved in individual research projects in the field and lab. New technologies such as GPS, GIS and hydrology software are utilized. Core classes are sizable but majors benefit from low student, teacher ratios in upper division classes. The average enrollment is 28 in lower division courses and less than six in upper division and graduate service courses.

The courses are, in general, the standard courses for a BS in Geology at most colleges and universities. For the last several years the department has administered written and oral tests to graduating seniors to determine if they are graduating with the skills and knowledge needed. The results of these tests and curriculum improvements they have engendered are incorporated in the major fields assessment matrix. For instance, the department has decided to incorporate more work with geologic maps into Igneous and Metamorphic Geology and in Structural and Field Methods to overcome a weakness discovered via one of the tests in interpreting geologic maps.

Most courses have associated labs in which students handle the material and tools that dominate much of practical geology. Labs in Mineralogy and Igneous and Metamorphic Geology involve mineral and rock samples. Students make thin sections to investigate the minerals and rocks and learn the techniques of thin section petrography. Mineralogy students use a textbook that includes a CD Rom as a resource. Sedimentary Geology labs involve detailed sedimentary rock identification as well as determining grain size distributions and characterization of grain shapes through sieving and measurements. Students now use EXCEL to keep track of this data, tabulate it and make graphs for analysis and presentation.

Twenty-five years ago geology was very much aligned with the petroleum and mining industries. Those fields have been joined by the environmental industry. It is the latter in which most of the Columbus State University graduates have gained employment. Recently developed courses in Hydrology and Environmental Geology, and a growing association with the Environmental Sciences program reflect this shift in emphasis and represent realignment of the curriculum to fit the needs of our majors.

Professional development has been supported by the faculty development program with institutional and Columbus State University Foundation funds. These funds have provided start-up expenses for some projects. The funds have also been used to pay partial expenses for travel to carry out projects and to present results at professional meetings. Travel for presentations is usually partially covered by these funds. Departmental and college funds have in some cases made up all or part of the differences. On some occasions, faculty have paid some of these expenses themselves.

Faculty and students have produced an extraordinary amount of prime research. The collective 20-year departmental bibliography includes seven books, 47 scholarly papers, and 63 published abstracts of research. Much of this literature (but not all of it) focuses on the regional geology of western Georgia. It is common knowledge in the geology

profession that CSU faculty (and their graduates) are the primary authorities on the geology of this broad geographic region. It is reasonable to claim that the total published professional output of the small CSU Geology Program, considering subjects researched and published in residence at CSU, exceeds that of any other academic unit in the University regardless of size.

Service to the community or region is of great use to the program, department, college and institution by enhancing the image of these units. Because the faculty are experts in local geology, they are often the first to be called with questions about the local geology or the environment. These calls range from questions about meteorites and mysterious substances found in fields and forests through fossils and gold, to problems related to surface processes like erosion or sedimentation. In addition, faculty are contacted to speak to school groups or arrange for groups of students to visit the CSU labs.

Productivity

The academic background of the students is above average for this degree program. The projected increase in the overall enrollment at Columbus State University will more than likely result in an increase in the number of geology majors and graduates. With an average of 513 credit hours generated each fall semester, the program is providing a significant service to other programs as well. The quality seems quite good, but there is a need for more students majoring and graduating with a degree in geology. Therefore, Columbus State University will direct attention towards recruiting and retaining more majors.

The department has surveyed employers as well as recent graduates of the program after they have spent a limited time in graduate school or employment. Students have generally expressed satisfaction with the BS in Geology program. Graduates have suggested increasing field experience, meeting other geologists, and increasing exposure to software. The department has begun to implement these suggestions. Employers indicate the material taught is appropriate.

The greatest strength of the program is the professional expertise of the faculty. The physical facilities are excellent. The school is in an excellent location with ready access to two major geologic provinces (Piedmont and Coastal Plain). Access to the coast and Valley and Ridge province is also convenient for weekend field trips. One faculty member's work has demonstrated that Columbus is an excellent location for access to unique fossil vertebrate localities. The Department is able to offer a number of individualized undergraduate research opportunities in paleontology, sedimentology and petrology. The close working relationship that exists with the environmental science program is beneficial to both programs.

Viability

A. Continue and strengthen the program

The primary mission of the geology program is the instruction of science courses in the core, an invaluable service to the institution. The program prepares well-trained graduates for work as professionals in geological and related fields, as well as for admission to graduate school. It also supplies scientists qualified to teach middle school science. Another important contribution is as a major source of expertise in the earth sciences, used by schools, industry and the general public. The university recognizes regional economic development as a "center of excellence". The geology faculty contribute as consultants to local commercial and industrial companies on such matters as foundation conditions, sink hole problems, and water quality.

Of the programs undergoing comprehensive program review this year, it is without a doubt that geology is the most problematic. The hiring of an additional instructor is unwarranted at this time, given the number of geology majors. The geology program needs to enact a plan for better recruitment of majors. Reassignment time must be given to faculty to work with the Admissions Office to recruit geology majors from across the state, to work with the CSU Foundation to identify possible donors for geology scholarships, to improve advising and increase retention, and to help obtain (perhaps through grants) state of the art equipment.

The expertise and national reputation of the faculty, the excellent location of CSU to two major geologic provinces, and the reliance of so many other programs on geology courses are strong reasons for maintaining the geology major. With the addition of a part-time instructor to teach introductory labs and free up senior faculty to teach larger core courses comes the additional possibility of their attracting more students to the geology major.

There is the potential for substantial growth in this important major, which will be reviewed again in three years. The program needs to undergo continuous curriculum review and should make a serious examination of successful geology programs of comparable size across the country, modernizing where necessary. A reasonable expectation is for the program to aim for System guideline minimums for enrolling and graduating students.