

GEOLOGY DEPARTMENT STRATEGIC PLAN

Section 1. Description of the Geology Program

1.1 Mission, vision, goals

The Geology Department consists of three FTE. We normally graduate five to eight students per year, though the actual annual number of graduates is quite variable. As a discipline, Geology exemplifies the liberal arts in that it is fundamentally interdisciplinary. It is the mission of the Geology Department to provide students with an historical and evolutionary framework that views their habitat, the Earth, as an evolving, dynamic system that interacts with its life forms, and whose life forms affect its processes. It is our vision to continue to provide and improve upon a curriculum for our students that is rigorous and comprehensive with an emphasis on research and writing; that emphasizes the interdisciplinary and global nature of geological science, highlights the interactions of humans and earth-surface processes; and one that fosters an aesthetic appreciation of the Earth and its beauty. In that light we desire our courses to be attractive to students, especially those courses designed specifically for general education and general interest, as it is those courses which ultimately provide the bulk of our majors. To achieve this vision the Geology Department has set forth the following goals.

Goal 1. To improve student recruitment. While the focus of this goal is recruitment of majors, it necessitates recruitment of students into our introductory courses.

Goal 2. To improve department visibility. Departmental visibility is obviously intertwined with student recruitment, but is important enough in itself to be listed separately.

Goal 3. To undertake a thorough evaluation of our curriculum. While perhaps more “strategic initiative”, this process is important enough in itself to be considered a goal. An attractive curriculum is obviously central to the recruitment of students; it is also important that students see the curriculum as meeting their needs once they graduate.

Goal 4. While maintaining our focus on a field-oriented program, we wish to **better develop technical and laboratory capabilities**, for the purpose of furthering those skills in our students.

Goal 5. To continue and improve upon a research agenda for our majors, with emphasis on the senior research requirement.

Goal 6. To better “connect” with the other disciplines (departments) on campus with which we share common interests (most notably chemistry, physics, biology, geography and environmental studies).

Goal 7. To develop better **communication and cooperation with other nearby geology programs.**

Goal 8. To upgrade communication with our alumni, and **develop an alumni network.**

Goal 9. To foster **public interest** in geology and related geosciences.

1.2 Programs

The Geology Department offers a geology major and minor. We are an integral part of the Earth Science Teaching major, and also contribute courses to the Environmental Studies major. We also contribute courses to NASP, FTS, and occasionally to Curriculum II.

1.3 Support Relationships

The Geology Department relies on the other departments of science and mathematics, as geology students (majors) are required to take courses in chemistry and mathematics (calculus), and commonly take courses in physics and biology. Many geology students also take courses in geography (especially GIS). The Library provides access to resources for both students and staff, for both classroom activities and research. We rely on its staff to provide guidance to students as they pursue research activities and for help in accessing materials (many of which are not on campus). The Kendall Center offers support for teaching and research activity and for other forms of professional development. The Advising Center offers support to students (especially FTS), and help with faculty advising. The Career Center offers career information and guidance for our students.

Section 2. Strategic Review

The Geology Department completed an external (ten year) review two years ago. Because much of that review concerned more immediate staffing and administrative issues, our longer range plans were not addressed in the detail we would have preferred. And from a planning perspective, because the past two years were largely spent getting our “team” in place, this plan is more focused on the short to intermediate term.

Strengths: Our greatest strengths are our faculty (including the addition of Julie Bartley to begin next fall) and our students. These strengths are manifested in our student research program, the historical acceptance of our students (over 50%) into graduate programs and generally good working relationships/rapport with our students. The Johnson/Youngquist endowment developed to support student research can also be considered a supporting strength.

Weaknesses. Our primary weakness is our “smallness”. We are caught in a “chicken and egg” situation where our small department size hampers our ability to recruit

students (see below), and because we have a relatively small number of students, we cannot grow the department. We lack modern instrumentation and some of our laboratory spaces are outmoded. We have been somewhat behind in embracing technology. Turnover in staffing in recent years has hampered our ability to plan.

Opportunities. Among opportunities for us, are an expected increasing demand for professionals in the geological sciences, a result of increasing demand for raw materials from rising standards of living in previously underdeveloped nations (like China and India), coupled with expected retirements from the workforce by 50% over the next ten years. Increasing societal awareness of environmental issues also bodes well for demand for geological professionals.

Challenges. In spite of the expected increasing demand for the geological profession, our greatest challenge has been (and likely will continue to be) attracting students to geology (see below). We are also challenged somewhat by our competing peer institutions who by and large have better facilities and larger staffs. The current economic situation will likely pose short term challenges, particularly for the procurement of funds for equipment and instrumentation needed to upgrade our program, and will likely limit the availability of grants needed to pursue our own research projects.

2.2 Barriers

The greatest obstacle for us is the fact students coming to Gustavus (or elsewhere for that matter) have limited knowledge or background of/in the geological sciences, and what rudimentary background they might have was obtained in middle school. Students are largely unaware of career opportunities that exist. Thus our ability to attract students falls solely on our introductory courses, and our ability to offer a variety of these courses is limited by our staffing. This problem is exacerbated at Gustavus by a meager natural science general education requirement (especially in light of the fact that a significant proportion of incoming students already take biology, chemistry, or physics).

As described our small department size hampers our ability to recruit students by limiting the numbers (and variety) of introductory courses that we can offer. It also naturally limits our budget, which has resulted in our relative lack of modern equipment and instrumentation. Staffing issues (such as retirements, resignations, sabbaticals, etc.) will obviously have a disproportionate effect on small departments.

Another barrier for us concerning general course enrollments is the reality that non-science students rarely take additional science courses outside of their basic requirement (especially if January Term is not included in this assessment). A readdress of the general “science” requirement could perhaps help us with enrollment issues.

Flat-lined budgets, and lack of “pooling” of equipment (and repair) lines (among other science departments) and the lack of ability to carry over unused budget lines makes it difficult to purchase, maintain, and repair expensive equipment.

Lack of technical support, specifically with electronic and computer expertise on sophisticated instrumentation, has negatively affected our desire to acquire such instrumentation, ultimately affecting both our research capabilities and our ability to bring modern instrumentation into our classroom. Though we have not required GTS support outside of basic services, it is likely that we will need such services in the future.

Another barrier that affects our research capability (for both faculty and students) is our relatively limited library resource, especially our relative lack of online resources. Inability for students (especially) to obtain research materials in a timely fashion both affects their coursework and also their research projects.

Section 3. Strategic Initiatives and Recommendations

3.1 Initiatives

Goal 1. To improve student recruitment.

Strategic Initiative 1.1. To undertake a curriculum review (see Goal #2). Here the focus will be on review of our introductory course(s), with a focus on what best will both serve the needs of General Education, as well as being attractive to students.

Strategic Initiative 1.2. To work more closely with admissions to find ways to identify and target prospective students.

Strategic Initiative 1.3. To upgrade the departmental webpage, with focus on information (especially career information) that might aid students in their major/career choice(s).

Strategic Initiative 1.4. To regularize and promote a field program (such as January Term and spring break opportunities), as these opportunities are especially useful for recruitment of students into the geology program.

Strategic Initiative 1.5. To better promote the “Geoclub” (student organization) and to help students develop a program of activities. (This is needs to be a student-based initiative—with encouragement from faculty.)

Strategic Initiative 1.6. To develop a more regularized program of bringing outside speakers to the department.

Strategic Initiative 1.7. To develop an outreach program to local high schools that helps promote geology (possibly with a community service component for our students).

Goal 2. To improve department visibility.

Because many of these initiatives should in effect increase department visibility they won't be repeated here.

Goal 3. To undertake a thorough evaluation of our curriculum.

Strategic Initiative 3.1. To evaluate the curriculum for our major offerings in order to provide our students with the best tools for success after graduation. Focus of the review will be on better integrating courses within the major, and to ensure that our students are developing necessary skills. We will also look to developing a stronger “inquiry-based”/problem solving approach in our courses.

Strategic Initiative 3.2. To evaluate our introductory offerings, and perhaps develop new offerings, in order to serve the modern needs of non-science students and also to serve the needs of the General Education program at Gustavus. These courses must necessarily be attractive and stimulating to students, as we must attract students for our upper level courses from these courses. (see also initiative 1.1)

Strategic Initiative 3.3. To foster an interdisciplinary approach to solving geological problems.

Strategic Initiative 3.4. Continue to promote a research agenda, with emphasis on the senior thesis (see .

Goal 4. Develop technical and analytical capabilities.

Strategic Initiative 4.1. Coupled with initiative 3.2 we need to evaluate technical needs our students.

Strategic Initiative 4.2. Embark on a plan to acquire needed technology and instrumentation.

Strategic Initiative 4.3. Evaluate our laboratory facilities, and carry out any redesign of spaces where necessary.

Goal 5. To continue and improve upon a research agenda for our majors.

Strategic Initiative 5.1. To evaluate the senior research component of the major with the goal of better facilitating (and structuring) the student research activity, to make for a more rewarding experience for our students (also part of initiative 3.1).

Strategic Initiative 5.2. To foster development of problem-solving skills by incorporating “research” components into our courses, leading to a culmination with the senior thesis.

Strategic Initiative 5.3. To identify and seek funding for faculty research that also promotes student research (e.g. REU).

Strategic Initiative 5.4. To identify and promote off campus research opportunities for our students. (e.g. REU).

Goal 6. To better “connect” with the other science disciplines.

Strategic Initiative 6.1. To encourage and initiate conversations concerning communal interests; for example acquisition of instrumentation that might be useful to other departments (e.g. SEM), technical support, or discussion of curricular concerns that might have impact across disciplines.

Goal 7. To develop better communication and cooperation with nearby geology programs.

Strategic Initiative 7.1. To continue discussions with geology faculty at MSU we have begun concerning cooperation between our faculties, including perhaps programmatic cooperation.

Strategic Initiative 7.2. To develop better lines of communication and potential for cooperation and collaboration with our colleagues at Carleton, Macalester, St. Thomas, and perhaps the U of M. An example might be coordination of field trips.

Goal 8. To develop an alumni network.

Strategic Initiative 8.1. To consider the development of an “alumni advisory board”, whom we can then use to consult for advice on departmental planning. (A model might be that of Augustana College).

Strategic Initiative 8.2. To develop an active communication device (such as an email listserv or blog) that can be used to facilitate communication between alumni and ourselves (e.g. for job announcements), and communication among our alumni.

Goal 9. To promote public interest and education in the geosciences.

Strategic Initiative 9.1. To make a conscious effort to become involved in public events/activities that might involve some aspect of earth science.

Strategic Initiative 9.2. To update and upgrade the Chester O. Johnson Geology Museum, to make it more educational in focus, with the goal of attracting more visitors.

3.2 Recommendations

Goal 1

Recommendation 1.1. Review of the general education requirement for natural science, with the goal of strengthening that requirement. While the more important goal is to fill society's need for a better science understanding, a stronger science requirement would likely improve our enrollments especially in general education courses.

Goal 4

Recommendation 4.1. Hire of a technician to be shared among science departments for the purpose of working with and maintaining instrumentation. This position should include some teaching duties (of the instrumentation).

Recommendation 4.2. Pooling of budget lines for acquisition and maintenance of equipment/instrumentation (among science departments).

Goal 6

Recommendation 6.1. Establishment of a more formal mechanism to facilitate these discussions (e.g. regularized meetings of science dept. chairs)

Section 4. Assessment

Goal 1.

Whether or not we have achieved Goal 1, should be indicated by our enrollment numbers.

Goal 2.

Assessment of Goal #2 is a little more nebulous. Increase in enrollments will likely indicate increased visibility (at least among students). Achievement of our other goals should also be an indication that we have increased our visibility. Ongoing success in obtaining grants (both external and internal) and the publication of our research should indicate external visibility.

Goal 3.

Any revisions of our curriculum and our individual courses should demonstrate Goal 3.

Goal 4.

Acquisition of new equipment and/or instrumentation, and any remodeling of our laboratory/research/classroom spaces will demonstrate work toward achieving Goal 4.

Goal 5.

Generation of student theses and the presentation of the better of our student research at regional or national symposia will demonstrate Goal 5.

Goal 6.

While difficult to measure (as we have no base), increased conversations among our colleagues over curricula, individual courses, and research should indicate work toward Goal 6. More specific instances of research collaboration, course collaboration, or curricular modifications (that help meet the needs of students of other disciplines) would all be signals of increased interdepartmental conversation and collaboration.

Goal 7.

Possible research collaboration, cooperative use of facilities on other campuses, field trips coordinated groups from other campuses would all be indications of working toward increasing cooperation and/or collaboration with colleagues from other campuses.

Goal 8.

Development of online alumni resources would indicate progress toward achieving Goal 8.

Goal 9.

A record of involvement in public lectures and other forms of community involvement by our faculty and/or students, and increased use of the Chester O. Johnson museum by the public and members of Gustavus community should demonstrate progress toward Goal 9.